

This paper substantiates the expediency of conducting scientific research into the formation of the concept of tax benefits within the framework of technology transfer, which would meet the strategic interests of the state and business needs. The study is aimed at finding the optimal level of tax benefits within the existing means of state support for the introduction of new technologies.

It is proved that the effectiveness of preferential taxation depends on the area of implementation, the level of the economy, the sustainability and immutability of tax legislation. Normative means of formation of a system of preferential taxation of innovation activity and technology transfer within the legal system are proposed, namely:

1) a candidate for tax benefits from the state must undergo a special permitting procedure for confirming its legal status;

2) the system of tax benefits for participants in innovative relations and technology transfer should include two options for tax systems. On the one hand, there should be a system of tax benefits based on a preferential rate of income tax, value added tax, and an increased level of depreciation. On the other hand, a special type of simplified taxation system should be implemented, which should contain special (preferential) rates for paying a single tax;

3) the types of activities that can be carried out by business entities wishing to receive tax benefits should be limited by law. Such activities should include only those that carry out activities in the field of social production of goods.

The results of the study take into account the world experience of using similar means of support and can be used in the formation of regulatory means for regulating these relations

Keywords: state technology support, tax incentives, technology taxation, stimulation of technological renewal

DIRECTIONS FOR THE IMPLEMENTATION OF REGULATORY MEANS FOR THE APPLICATION OF TAX BENEFITS IN THE GENERAL SYSTEM OF REGULATORY REGULATION OF TECHNOLOGY SUPPORT MEANS

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1. Introduction

Technology is a special object of economic relations. On the one hand, it is a means of production, and on the other hand, it acts as a specific intellectual product and a special product. The process of developing and implementing a new technology is always a risky process. The developer and recipient of the technology always feel the danger that the implementation of a technological update project may not give the expected result. The degree of riskiness of the implementation of technology is increased due to the high cost of its components, which must be purchased and brought to the level of industrial suitability. Because of these factors, only

highly profitable areas of business can afford the process of implementing new technologies.

State support for the process of technological renewal of the production sector is not new. Most world powers are trying in every way to help this process. At the same time, approaches to such support are individual and are not endowed with signs of unification. The only exceptions to this rule are the countries of the European Union, which, within the framework of the joint program “Horizon Europe”, support joint processes of innovative transfer.

Within the framework of state regulation of the economy, the processes of stimulating the implementation of new technologies are also actively used and developed. Within

the framework of the current legislation of certain countries, the concept of a special legal regime for the activities of innovative enterprises was implemented. Within the framework of this approach, the state focuses its attention on the formation of a special systematized set of restrictions and preferences, which in general are aimed at stimulating the process of technological renewal. Within the framework of acts of perspective legislation, the state develops algorithms for more active interaction between the scientific community and business.

In general, state intervention in the economic processes of the implementation of new technologies occurs solely for the sake of one thing – to support their developers and authors at the initial stage of this process. It is when a business entity bears the basic costs of acquiring components the riskiness of this kind of investment is the greatest.

Among all the existing measures to support and stimulate the process of technological renewal, the most debatable is the provision of tax benefits and preferences to such entities. The problem of this measure lies in the fact that, on the one hand, the state voluntarily refuses budget revenues and thereby loses resources to perform its tasks. On the other hand, such a refusal is temporary, and, in the future, a well-established technological process can bring much more social effect. Most scientific discussions on this subject are precisely about the possibility of finding conditionally ideal parity between these interests. Thus, to ensure the minimum critical level of budget revenues and create favorable economic conditions for investors and technology recipients. Within the practice of managing the national economy, state bodies could not achieve this result. As a result, within the current legislation of this state, tax benefits do not apply. The only example of exemption from payment of mandatory state payments is the postponement of payment of customs duties in the case of export of equipment for innovative enterprises. Nevertheless, such a means of stimulating technological renewal did not bring significant importance.

The main task of scientists, in such circumstances, is to assess and form a regulatory model of tax discounts that would meet the existing economic challenges. It is science that must find and formulate a balanced mechanism for implementing tax incentives that will meet the strategic interests of the state and the economic needs of business. The urgent need for technological renewal of the manufacturing sector, as well as the presence of public (state) interest in their mass implementation, indicate a high level of relevance of relevant research.

2. Literature review and problem statement

Issues related to the definition of means of support and intensification of technology transfer processes have been investigated in numerous scientific works and have been the subject of scientific research by many scientists. Many of them investigated in detail the feasibility and mechanisms for granting tax benefits and preferences. Thus, in [1], the general theoretical issues of the expediency of providing tax benefits to authors and developers of innovations and technologies were investigated. It justified the need to form a unified tax strategy for innovation and fix the list of innovations and technologies that deserve such support. However,

no proposals have been formed as to what this kind of system should look like. They only proposed a foundation of what it should look like.

Work [2] investigated the regularities of the influence of taxes and fees on the development of intra-company (corporate) processes of technological renewal. It is proved that a greater level of tax burden on the corporation leads to a decrease in the level of patent applications, which indicates a slowdown in the process of implementing new technologies. However, there were no ways out of this situation.

As part of study [3], the level of positive effect from the introduction of tax benefits was studied on the example of Brazil. The level of percentage increase (increase) in the financing of research works, the number of highly qualified personnel was determined. In general, the only positive economic impact of the introduced tax privileges was noted and their quantitative statistical indicators were formed. However, there is no complete picture of the economic effect of their implementation, due to the lack of access to such information.

Paper [4] draws conclusions on the feasibility of applying tax incentives within the processes of technological renewal of the industrial sector. On the example of China, a low level of economic performance in the case of providing significant benefits for the payment of corporate tax has been proven and the expediency of indirect incentives is justified. The model of tax incentives is described, which is based on an increased level of depreciation, investment tax deduction, and investment tax credit.

Within the framework of study [5], the inexpediency of using a generalized approach to the establishment of joint tax benefits at the level of international regulation was substantiated. It is proved that tax benefits should be determined individually, taking into account all factors of economic development of a particular territory or region.

In [6], the reasons and conditions that affect the effectiveness of tax benefits are investigated, but no system of means of tax support for technology transfer has been formed.

In the course of study [7], the existing experience of regulatory regulation of preferential taxation of technology transfer was studied but the experience of its use was not analyzed.

In [8], the statistical data on the practice of using means of preferential support for innovation processes and within the Organization for Economic Cooperation and Development were investigated. However, no assessment of their system and implementation mechanism has been provided.

Within the framework of study [9], a model for assessing the effectiveness of state regulation of innovation policy of Ukraine, which is based on scientific (mathematical, economic, etc.) methods of cognition, was proposed. However, the proposed concept concerns the entire system of means of state regulation and does not pay detailed attention to the role and significance of tax benefits within them.

In [10], an assessment of the regulatory regulation of means of supporting economic activity within Ukraine was provided. However, due attention is not paid to the system of means of stimulating innovation activity and its preferential taxation – in particular.

All the above works [1–10] indicate the focus of scientific research on solving certain aspects or manifestations of the impact of tax benefits on the process of technological renewal. No studies have been identified within which a comprehensive

concept of measures for tax incentives for innovation processes and technology transfer would be formed. Also, there are no papers in which such a concept would be justified through the prism of the current legislation of a particular country.

All this suggests that it is expedient to conduct research into the formation of a system of tax benefits within the framework of innovation and technology transfer. This kind of system can become the basis for both further studies and the basis for the formation of promising regulations and changes in current legislation.

3. The aim and objectives of the study

The aim of this study is to form a system of regulatory means of fixing tax benefits for technology transfer. The achievements obtained can become the basis for changing the national legislation of a particular country, related legal systems of other countries, the basis for further scientific research.

To accomplish the aim, the following tasks have been set:

- to systematize and classify existing measures of state support for the implementation of technology;
- to analyze the circumstances that affect the formation of tax benefits in the system of state support for the implementation of technologies;
- to form conceptual proposals on a possible system of means of regulatory regulation of tax benefits for technology transfer.

4. The study materials and methods

The object of the study is the experience of international regulatory support for the provision of tax benefits in the field of technology transfer results from their use.

In the course of our study, the provisions of international legislation, current regulations, information from open sources were used. In addition, recommendations of leading international institutions, statistical information, and public information were involved. For the formation of conclusions, formal-logical methods of cognition, methods of modeling, deduction, induction, comparison, methods of formal-logical interpretation of the content of scientific and normative categories and concepts were employed.

5. Results of the study of ways to improve the regulatory means of applying tax benefits

5.1. Systematization and classification of existing measures of state support for the implementation of technology

Despite the advantages of the individual approach of each country to the formation of its system of means of supporting the processes of technological renewal, it is possible to single out certain related areas of this activity. The most striking example of such cooperation is the European Union's Horizon Europe program [6]. Within the framework of this program, the countries of the European Union agreed to organize their cooperation to cover the process of research and development work, to promote the process of their adaptation as soon as possible to the needs of the real sector

of the economy and industrial implementation. In this case, the main emphasis is on the means of the so-called indirect support. This is the financing of fundamental and applied scientific research or the creation of infrastructure environments within which the transfer of scientific achievements from their developer to the business entity will take place. In addition, the general focus of such support was determined, which does not cover all areas of the economy but only its individual vectors. Thus, the areas of support include innovation and technology transfer on the following issues:

- health;
- ecology;
- digital technologies;
- energy-efficient technologies;
- transport technologies and others.

However, the system of measures of state support for the processes of innovative and technological renewal is not covered only by the framework of the Horizon Europe program. In general, the following levels can be distinguished:

- financing of education and basic research;
- management adjustment of market failures associated with the financing of innovations;
- support for venture capital;
- special innovation and investment policy of the EU member states;
- providing guarantees on loans to finance innovative projects;
- development of an effective patent system;
- financial incentives for innovation: (direct budget financing and tax incentives) [7].

Measures to support innovative and technological renewal are actively used within the Organization for Economic Co-operation and Development (OECD) [8]. Thus, 26 out of 34 OECD member countries offer tax incentives for business to implement R&D. Among the countries that are not part of the organization, this practice is actively used by Brazil, China, India, Singapore, the Republic of South Africa, and others [9].

OECD experts also point out that if tax incentives provide for the transfer of benefits to subsequent tax periods, then they themselves are not enough for effective support. Therefore, an important addition to tax incentives are programs for budget financing and the provision of soft loans for innovation. Therefore, most OECD countries supplement their tax incentives with other support tools [11].

Within the current legislation of Ukraine, all incentives and support measures are covered only by acts of innovative legislation. Among them are the Law of Ukraine "On Innovation Activity" [12], the Law of Ukraine "On Priority Directions for the Development of Science and Technology" [13], the Law of Ukraine "On Priority Areas of Innovation" [14], and others. These regulatory documents provide for certain means of supporting and stimulating the implementation of innovations and new technologies. Their system analysis makes it possible to determine that this kind of means does not contain the means of financial support. They are mainly aimed at more efficient use of existing funding mechanisms by identifying the main directions of scientific research. The main focus, within the general list of incentive measures, is on the formation of infrastructure facilities (technopolises, technoparks, etc.), as well as on the exchange of information.

In general, we can state that within the framework of global cooperation there are no mechanisms for general-

izing approaches to determining the means of supporting the implementation of technologies. This is due to the fact that the economic systems of each country are different and individually formed. However, most countries, within the framework of their innovative public policy, use the means of tax incentives, providing a certain kind of tax benefits.

5. 2. Analysis of the circumstances that determine the formation of tax benefits in the system of state support

Analyzing the effectiveness of tax privileges, OECD experts set the stability of the tax system over time as the main condition for their effectiveness [11].

Also, we can find conclusions that the effectiveness of providing tax benefits depends on the stability of the country's legal system, and the mass nature of their provision, on the contrary, demonstrates a negative impact on their effectiveness [2].

As part of the practice of using tax incentives for innovative enterprises in China, the dependence of the process of technological renewal on the type of tax benefits provided was formed. Thus, the use of a special type of investment tax and a preferential corporate tax rate showed inefficiency in the context of the technological renewal process. At the same time, the accelerated depreciation rate of existing equipment and the investment tax credit have led to a significant increase in new technologies within the manufacturing sector of the economy of that country [4]. Thus, from this example we can conclude that the type (mechanism) of providing a tax benefit has a different economic effect within a single country.

Statistical analysis of the effectiveness of the introduction of tax benefits within Brazil makes it possible to establish certain patterns of them. Thus, a decrease in the tax burden by 6.8 % led to an increase in labor resources, an increase in the number of innovations, an increase in the level of employment of educated personnel, an increase in foreign investment [3]. At the same time, scientific and research works were chosen as the stage of the innovation cycle at which support was provided by providing tax benefits. In other words, tax benefits were provided to those entities that are the results of scientific or research work in their activities. This has made it possible:

- to solve part of the social problems of the state in terms of employment of additional staff (5 %), young specialists with a bachelor's degree (18.5 %);
- to ensure an increase in the number of scientific and research works (9.5 %) and an increase in the number of scientists involved in the field of business (16 %) [3].

Thus, this statistical analysis indicates that the target orientation of fiscal policy is also important. In the case of providing tax benefits to individual entities engaged in specific innovation activities, the effectiveness of the entire field of scientific research is achieved.

As part of the generalization of the effectiveness of the application of various kinds of tax benefits within Ukraine, a number of factors were formed that influence the determination of the feasibility of their application [15]. Thus, it was determined that owing to the introduction of tax benefits, the state can receive:

- improving the competitiveness of the economy, updating production assets, introducing energy-saving and innovative technologies into production processes, increasing employment, wage growth;
- expansion of the tax base and increase in the future income from taxes to the budget due to the economic efficiency of enterprises and their financial results;

- increase in production and sales of products, increase in added value of products, increase in wages of workers due to the growing need for skilled workers.

It is noted that the attractiveness of tax benefits of participants in technology transfer relations is as follows:

- affordability compared to other sources of financial resources;
- the cost of a tax credit (interest for using funds in case of provision on a temporary basis) is usually much lower than a bank loan;

- the value of the tax credit is not affected by market changes in the economy;

- obtaining tax benefits is characterized by less stringent requirements for security and the process of obtaining funds compared to the complex and lengthy process of borrowing funds from banking institutions or placing bonds.

From the above, it is also seen that the main criteria affecting the effectiveness of providing tax benefits to the innovation sector are stability, the procedure for obtaining them, and their size.

Generalization of the circumstances arising from the determination of the effectiveness of tax benefits makes it possible to form the following list of them:

- orientation of tax benefits (the area to which they should be applied);

- the mechanism of their receipt (the number of stages and stages that a candidate needs to go through for tax benefits);

- stability of the system of functioning of tax benefits (the longer and without changes there is a legal regulation of the process of their provision, the better the effect will be from their application);

- the essence of those negative economic factors that exist in the economy of a particular country (that is, the economic sector or industry within which incentives are required).

These circumstances (factors) must be taken into account during the formation of an integrated system of tax benefits within the innovation process and technological renewal. The formation of a system of preferential taxation on their basis will ensure a faster economic effect. Until now, scientists did not propose to lay the basis for the normative influence of the state, those circumstances that determine the essence of a particular phenomenon, or process.

5. 3. Formation of a system of means of regulatory regulation of tax benefits for technology transfer

Before proceeding to the study of the means that can be formed to comprehensively stimulate innovation, you need to find out exactly what tax benefits are provided in other countries.

In the countries of the European Union, the following tax discounts for innovation are applied [16]:

- tax credit, that is, a reduction in income tax in the event that the enterprise carries out the costs of scientific and technical development;

- increased deduction, research and development costs, and a corresponding decrease in the income tax base;

- additional depreciation of fixed assets for innovative projects;

- benefits for the payment of value added tax, duties, personal income tax;

- income tax exemptions in the forms of a tax credit;

- additional write-off of permissible expenses for research and development (enhanced allowances);

– accelerated depreciation.

China applies preferential corporate tax rates, tax holidays, tax credit, accelerated depreciation, and special investment tax [4].

In Brazil, the provision of tax benefits in the form of preferential income tax rates prevails [3].

However, the formation of a system of normative means of preferential taxation within Ukraine requires taking into account the peculiarities of the fiscal policy of this country. The main types of taxes for businesses in Ukraine are:

- corporate income tax;
- value added tax;
- personal income tax;
- single tax (within a special legal tax regime).

Thus, it can be argued that within Ukraine there are no such types of taxes as corporate tax, investment tax, and others. Because of this, simple copying of the regulatory tax mechanisms of other countries is guaranteed not to be effective. Also, it is necessary to take into account the main elements of the legal mechanism of taxation, which must be taken into account when forming such a system (tax rate, tax base, and a taxpayer).

Regarding the area of taxation. The experience of other countries proves that the social effect directly depends on which area was chosen by the state for preferential taxation. Most developed countries prefer to provide tax benefits in the field of scientific development (scientific, research and development). The specificity of this area in Ukraine is in the fact that the majority of specialized scientific institutions have the status of non-profit institutions and do not bear the standard burden of tax burden. Thus, it is not advisable to provide benefits to these subjects. However, a certain part of innovative improvements and new technologies is being introduced in the field of private law entities. And they are already taxpayers of the main types of taxes in Ukraine. It is these entities that most of all need state support for the introduction of new technologies, including the provision of tax benefits. Because of this, the prevailing area in which the state should provide tax incentives is innovation and technology transfer. Recipients of tax benefits should be subjects of innovation and technology transfer (developers and recipients of innovations and technologies).

Regarding the types of taxes and fees within which tax benefits should be provided. Ukraine has its own tax system based on certain taxes and fees. There is no need to introduce new taxes and fees for the subjects of innovation and technology transfer since such innovations are guaranteed to bring a negative economic effect in this area. And proposals to change the regulatory approach to the provision of tax benefits should be implemented within the existing tax regime. Under such conditions, the most appropriate is to apply a preferential rate of corporate income tax, a preferential rate of value added tax, and a personal income tax.

Regarding the introduction of a special legal regime for taxation of innovation. Within the current tax legislation of Ukraine, there is a special tax legal regime (simplified taxation system). It is expedient to introduce a special group of payers of the simplified taxation system (for example, group No. 5), which will unite all participants in the innovation process and technology transfer. The introduction of such a special legal regime, in addition to the main tasks of support-

ing and stimulating the implementation of new technologies, can ensure state control over the compliance of candidates for preferential taxation. Thus, the state may introduce a special permitting procedure for granting such status in order to obtain confirmation of the candidate's compliance with the requirements and goals of state support during its implementation. The introduction of a special permitting procedure can increase the efficiency of state control over the activities of innovative enterprises and will allow a more rational redistribution of the economic effect of this.

Regarding indirect methods of tax incentives. Most economically developed countries of the world use increased depreciation rates as a means of stimulation. Its essence is the fact that the income tax payer has the right to increase the amount of expenses for a certain part of the previously purchased equipment. Thus, reduce the number of tax deductions and get free cash resources. The established method of tax incentives can positively affect the amount of technical and industrial equipment within the country's economy. It has the potential to increase the number of high-tech and high-tech fixed assets. And this is exactly what the Ukrainian economy really needs. It is because of the specific economic result that this means of indirect tax incentives must necessarily be used within the national legal system. Another means worthy of attention is the provision of tax holidays. Its essence is the fact that a tax liability arises according to the general rules but the moment of its implementation is postponed in time to a later period. Such incentives are appropriate at the initial stages of the development of innovation and bring a relative, temporary economic effect. Deferred tax liabilities must still be fulfilled in a different time period. In case of their systematic occurrence during the grace period and one-time payment at another time, this will have a negative impact on the overall level of solvency of such a company. Due to the outlined factors, the issue of providing tax holidays is not regarded as a means of tax incentives that should be implemented in the Ukrainian legal system.

In general, it is possible to form the following proposals on the main regulatory means of providing tax benefits for subjects of innovation and technology transfer in Ukraine:

– a candidate for tax benefits from the state must undergo a special licensing procedure for confirming the legal status as an innovative enterprise or subject of innovation or technology transfer;

– the system of tax benefits for participants in innovative relations and technology transfer should include two options for tax systems. The candidate for their receipt must be given the right to independently choose from the gap of them. On the one hand, there should be a system of tax benefits based on a preferential rate of income tax, value added tax, and an increased level of depreciation. On the other hand, a special type of simplified taxation system should be implemented, which should contain special (preferential) rates for paying a single tax;

– the legislative activities that can be carried out by business entities wishing to receive tax benefits should be limited. Such activities should include only those that carry out activities in the field of social production of goods.

All outlined funds should be reflected in the Tax Code of Ukraine as a single regulatory legal act that can determine the specifics of establishing, calculating, and charging taxes and fees.

6. Discussion of results of investigating the criteria for the effectiveness of technology for its further financing and budget support

The proposed concept of tax incentives within the framework of innovation and technological renewal of the manufacturing sector is our original vision of the direction of development of this issue. The mass distribution of tax privileges in foreign legal systems testifies to their effectiveness. The formed proposals for changing the legal system of Ukraine are formed taking into account practical experience. In determining them, the circumstances that affect the effectiveness of preferential taxation were also taken into account. In general, the defined concept is suitable for use within the legal technique of the formation of regulatory legal acts.

The research is aimed at forming a conceptual approach to the system of preferential taxation of innovation and technology transfer in Ukraine. It is possible that if it is reflected within the framework of the current legislation, the proposed concept will require some revision. However, in any case, all previous scientific studies [1–10] either investigated certain aspects of this issue or studied the experience of other countries. None of the scientists who investigated this issue proposed to form an integrated system of preferential taxation within a particular country. The results of this scientific study contain conclusions that can become the basis for the formation of acts of promising legislation of national and international legislation, which is their advantage over similar studies.

The main disadvantage of the study is the lack of objectively systematized information about the economic results received by specific business entities that have previously benefited from tax benefits. Business entities tend to hide this information due to the component of trade secrets. The lack of such information makes it impossible to form proposals for a system of preferential taxation, with a higher coefficient of effectiveness.

When conducting this study, not all socio-economic technologies were taken into account in its subject. Only production technologies that can be the basis of the production process were taken into account. Technologies for the implementation of social, psychological, pedagogical, political, and other processes were not taken into account.

Further development of this study will allow us to obtain the results of a practical orientation. On its basis, draft laws of Ukraine, draft acts of national legislation of other countries, draft international documents can be formed.

7. Conclusions

1. The study of existing means of state support for the introduction of new technologies has established that the ap-

proach to their understanding is not unified and unanimous. Within each country, this set of tools is special and unique.

2. During the study of circumstances that affect the degree of effectiveness of preferential taxation, a number of dependence factors were identified. It is proved that the effectiveness of preferential taxation depends on the scope of their implementation, the level of the economy, the sustainability and immutability of tax legislation. The dependence of the effectiveness of the technology on the mechanism and type of previously provided tax benefits has been formed.

3. The standard means of forming a system of preferential taxation of innovation activity and technology transfer within Ukraine were proposed. It is justified that it should look like this:

- a candidate for tax benefits from the state must undergo a special licensing procedure for confirming the legal status as an innovative enterprise or subject of innovation or technology transfer;

- the system of tax benefits for participants in innovative relations and technology transfer should include two options for tax systems. The candidate for their receipt must be given the right to independently choose from the gap of them. On the one hand, there should be a system of tax benefits based on a preferential rate of income tax, value added tax, and an increased level of depreciation. On the other hand, a special type of simplified taxation system should be implemented, which should contain special (preferential) rates for paying a single tax;

- the law should be limited to the activities that can be carried out by business entities wishing to receive tax benefits. Such activities should include only those that carry out activities in the field of social production of goods.

Conflicts of interest

The authors declare that they have no conflicts of interest in relation to the current study, including financial, personal, authorship, or any other, that could affect the study and the results reported in this paper.

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Data availability

All data are available in the main text of the manuscript.

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