

Stimulating financing innovative activity

Стимулювання фінансування інноваційної діяльності

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Purpose: The aim of the study is to analyze investment activities in Ukraine to determine effective mechanisms and incentives for financing innovative activities.

Design / Method / Research approach. In the national economy of Ukraine, effective models of financing innovative activities, favorable for enterprises that introduce innovations, have not been created. Carrying out innovative activity, which is highly risky and does not always enable to plan profit amount, requires the use of financing flexible forms. Currently, there is no solution to individual issues of strengthening the positive impact of state financial policy on the innovation development in industry, funding sources optimization for innovation. In this regard, it is necessary to clarify the scientific provisions on the substantiation of mechanisms for stimulating the innovative activities financing as an important element of the national economy development state regulation.

Research results. The trends of innovative activity in terms of its financing sources have been analyzed. The problems of organizing the industrial enterprise financing have been highlighted. Prospective ways of solving the problem of financing innovative activities volume increasing and structure improving have been presented. It is necessary to transform the depreciation, budgetary and taxation, credit, technical and technological, foreign trade policy.

Theoretical value of research. It is proposed to modernize the methodological foundations for the targeted comprehensive

Мета роботи: аналіз інвестиційної діяльності в Україні для визначення дієвих механізмів та стимулів фінансування інноваційної діяльності.

Дизайн/Метод: У національному господарстві України не створено ефективних моделей фінансування інноваційної діяльності, що є сприятливими відносно підприємств, які впроваджують інновації. Проведення інноваційної діяльності, яка є високо ризикованою і не завжди дозволяє чітко спланувати обсяг прибутку, потребує застосування гнучких форм фінансування. Нині не мають рішення окремі питання посилення позитивного впливу державної фінансової політики на розвиток інноваційної діяльності у промисловості, оптимізації джерел фінансування інновацій. У зв'язку з цим, необхідне уточнення наукових положень щодо обґрунтування механізмів стимулювання фінансування інноваційної діяльності як важливого елементу державного регулювання розвитку національного господарства.

Результати дослідження: Проаналізовано тенденції інноваційної діяльності у розрізі джерел її фінансування. Виділено проблеми організації фінансування інноваційної діяльності промислових підприємств. Подано перспективні шляхи вирішення проблеми збільшення обсягу та удосконалення структури фінансування інноваційної діяльності. Необхідна трансформація амортизаційної, бюджетно-податкової, кредитної, техніко-технологічної, зовнішньоторговельної політики.

Теоретична цінність дослідження: Запропоновано провести модернізацію методичних основ розробки цільових

programs development, implemented in the innovation sphere, which should consider the possibilities of using the appropriate instruments inherent in different areas of public financial policy, primarily budgetary and taxation.

Practical value of research. In order to stimulate innovative activities financing, it is necessary to introduce public-private partnership instruments. Various instruments can be used to solve the problem: direct government funding, government guarantees provision, joint (with a private partner) entrepreneurship (with or without a creation) on the basis of an open transparent tender. Further stimulation of conscientious venture business is advisable.

Originality / Value of research. The research is an original result of scientific work carried out by the author's team.

Research Limitations / Future Research. It is advisable to stimulate a conscientious venture business, which inherently tends to the implementation of innovative activities. The tools for the administration of intellectual property recognized by the world practice should be introduced.

Type of article: theoretical.

Key words: financing, innovation, innovative activity, industry.

комплексних програм, що здійснюються в інноваційній сфері, які повинні враховувати можливості застосування відповідних інструментів, що притаманні різним напрямкам державної фінансової політики, у першу чергу бюджетним та податковим.

Практична цінність дослідження. З метою стимулювання фінансування інноваційної діяльності необхідно впровадження інструментів державно-приватного партнерства. Тут можливе застосування різних інструментів: пряме державне фінансування, надання державних гарантій, спільне (з приватним партнером) підприємництво (із створенням юридичної особи або без створення) на основі відкритого прозорого конкурсу. Доцільно подальше стимулювання сумлінного венчурного бізнесу.

Оригінальність / Цінність дослідження. Дослідження є оригінальним результатом проведеної авторським колективом наукової роботи.

Обмеження дослідження / Майбутні дослідження. Доцільне подальше стимулювання сумлінного венчурного бізнесу, який за своєю природою тяжіє до здійснення інноваційної діяльності. Слід запроваджувати визнані світовою практикою інструменти адміністрування інтелектуальної власності.

Тип статті: теоретичний.

Ключові слова: фінансування, інновації, інноваційна діяльність, промисловість.

1. Introduction

It is regarded that economic development should take place on the basis of the application (commercialization) of innovations directed to the different types of economic activities of various technological structures. At the same time, a progressive structure of the national economy is considered to be one in which most of the added value is formed by high-tech industries (enterprises of higher techno-economic paradigms, traditionally inclined to innovate). Accordingly, the implementation of innovative activities is highly risky and it does not always enable to plan the profit amount. It is required flexible forms of financing application.

However, most national economies, despite the measures taken to stimulate the introduction of innovations and new technologies, are faced with the problem of the dominance of raw materials industries or industries that provide a minimum level of product processing. Such industries frequently are monopolists in certain sectors of the economy and provide economic well-being through obtaining monopoly rent.

The national economy of Ukraine is faced with the problems of the raw materials industries dominance, unfavorable for innovation. However, both among the members of the government, and among scientists, and among the political elite, there is an understanding that the development of the Ukrainian economy should take place in conditions of innovations wide and highly efficient use, and the pace of this development should be outstripping and significantly exceed the world average. The solution to this complex and fateful task is possible as a result of increasing the efficiency of mobilizing innovations through various sources of financing, improving mechanisms for the rational use of available innovative resources, enhancing their positive impact on the industry technological renewal dynamics, harmonizing innovation and financial policies, improving mechanisms for enterprises industrial innovation regulation.

The effectiveness of innovative activities can only be ensured by using the models and mechanisms of financing of such activities approved by the world practice.

Unfortunately, in the national economy of Ukraine, effective models of financing innovation activities, favorable for enterprises that introduce innovations, have not been created. In particular, permanent "financial crises", bank insolvency for long-term lending, high inflation rate, currency instability, etc., have an effect.

In such circumstances, research aimed at finding the latest models and mechanisms to stimulate the financing of innovative activities is relevant and significant.

The aim of the study is to analyze investment activities in Ukraine to determine effective mechanisms and incentives for financing innovative activities.

2. Formulation of the problem

In the context of the formation of the knowledge economy, the ability of countries to create and use knowledge, to preserve and effectively use the existing scientific and technological potential enables to gain competitive advantages and accelerate the socio-economic development of society. Scientific ideas, innovations and new technologies are becoming the main factors in the development of society along with traditional ones (investments and labor resources), and also help to solve the problem of resource depletion for their most rational use. In the course of financing innovative activities theory, methodology and practice research in the context of the transition to a post-industrial economy, leading Ukrainian scientists have achieved significant results. In particular, the work (Tyvonchuk, 2007) examines the forms, methods and tools of financial incentives for innovative processes in industry. One of the forms of increasing financial incentives for innovative processes in industry is the creation of new elements of innovation infrastructure, among which industrial parks are gaining significant importance, capable of concentrating intellectual, financial, material and other types of resources (Boyko, 2015; Hritsenko, 2016). Many scientific works are devoted to the generalization of scientific approaches to the innovation and investment activities management of industrial enterprises (Tovmasyan et al., 2013). Innovative enterprises are central to economic growth and jobs. They are focused on the commercial exploitation of new ideas, technologies or other types of knowledge and business practices by introducing new products and services to the market, creating or entering new markets, or using new, more efficient production methods or organization. In general, the innovative activities financing has important features in comparison with standard investment projects: first, in contrast to conventional investment projects, innovative projects are characterized by a higher level of uncertainty of final results; secondly, it is rather difficult to predict the commercial results of innovative projects, the standard procedures for evaluating such projects do not work very reliably; thirdly, in many cases neither the investor nor the institution financing the project know its real potential. All of the above leads to additional risks and increased costs. Also, innovative firms have a relatively high proportion of intangible assets embodied in human capital (Ehorov, 2016).

Considerable attention is paid to innovation as an innovation process (Zizlavskiy, 2013). Other authors focus on the importance of innovation as one of the main factors influencing the competitiveness of enterprises and economies (Liubkina et al., 2019). A combination of the two approaches can be found in scientific works that interpret innovation as a process of state change, that is, the transition from innovations to the results of their implementation (Azgaldov and Kostin, 2008; Morris, 2013). Many works highlight foreign experience in stimulating the financing of innovation (Marchuk, 2011; Vasulushen et al., 2016; Kvasha, 2016; Zakharkina et al., 2019). The issues of financial support of the innovation process were considered in studies (Barton, 2007; Reillon, 2015; Wehrlue, 2016). However, their essence is based mainly on the idea of maximizing the volume of financing without consideration modern development trends, as well as on providing an appropriate resource base. Among the main limitations of modern methods underlying innovation policy, the work (Lokhinova, 2011) highlights their focus mainly on analyzing the innovation component of the developed countries economy and ignoring such important factors in the developing countries innovation system development as the stability of institutions that regulate the innovation environment.

Among the main factors influencing the innovative development of Ukraine, there are: low efficiency of state regulation and legislation; the complexity of business and tax payment

procedures organisation and liquidation; underdeveloped infrastructure; low intensity of competition in local markets; lack of effective cluster structures; low level of investor protection; low quality of economy state regulation and the level of the legal and regulatory framework, including innovations; low innovation readiness of enterprises and low level of cooperation in research activities between universities and industry; weak resource provision for innovation activities, etc. (Prokhorchuk, 2015; Semenenko, 2019). The formation of effective state scientific, technical and investment policy should consider the main factor of economic dynamics - innovations focused primarily on the growth of labor productivity. The innovation activity promoting of the scientific and industrial sphere is an important task and condition for the economic independence formation of Ukraine (Horodianska, 2019).

In general, the analysis of scientific publications enables to note a certain fragmentation of scientific and methodological approaches to stimulating the financing of innovative activities and the absence of domestic practical research aimed at coordinating the innovation policy and the financial mechanism. In addition, in the conditions of post-crisis development, accompanied by a rapid redistribution of the resource base and an increase in the negative impact of structural deformations, it is advisable to conduct additional research on the forms, methods and mechanisms for the innovative activities financing stimulation. Currently, there is no solution to certain issues of strengthening the positive influence of state financial policy on the innovative activity development in industry, optimization of financing sources for innovation. In this regard, it is necessary to clarify the scientific provisions on the substantiation of mechanisms for stimulating the financing of innovative activities as an important element of state regulation of the national economic development.

3. Result

In scientific discourse, the process of introducing and commercializing innovations is considered one of the factors that can maintain high rates of economic development and the proper structure of the national economy (Horodianska, 2019, Yehorov, 2016, Shumpeter, 1982). At the same time, it is obvious that the mechanism of innovative activity of industrial enterprises can be effective only if it considers the real state of economic development, ensures the achievement of scientifically grounded priorities, contributes to the course of broad modernization of the national economy and the general transition of the economy to an innovative development model. Nevertheless, in Ukraine, the regulatory and stimulating potential of the state support system for innovative activities is generally not used sufficiently. The innovative resources of industrial enterprises are depleted and cannot provide the necessary modernization transformations and adaptation to post-crisis challenges.

Innovative activity in the national economy of Ukraine remains traditionally low (at the same time, domestic statistics considers even enterprises where the share of sold innovative products in the total sales volume is less than 1% are innovatively active). During 2000–2019. the indicator of innovative activity in industry ranged from 11.2% (2006) to 18.9% (2016) (Naukova ta innovatsiina diialnist, 2021). At the same time, the indicator of the total volume of financing for innovative activities demonstrates unstable dynamics, in particular years showing an increase or decrease (Table 1). It is indicative that the indicator of innovative activity is loosely correlated with the indicator of the total volume of innovative activity financing.

It is obvious from the presented table that the indicators of innovation activity and innovation activity financing in the Ukrainian economy are unstable. Thus, compared to the previous year, the level of innovative activity increased in 2011, 2012, 2015, 2016 and 2018, and the volume of financing for innovative activity increased in 2011, 2015, 2016, 2018, 2019. In 2012 the level of financing for innovation activity increased, while the volume of financing for innovation activity

decreased (Naukova ta innovatsiina diialnist, 2021). It indicates the lack of economic sustainability of the national innovation system.

Table 1 – Innovative activity and the total amount of financing for innovative activity in the Ukrainian economy

Year	Share of enterprises engaged in innovations, %	Total amount of innovation activity financing, mln. UAH
2000	18,0	1760,1
2010	13,8	8045,5
2011	16,2	14333,9
2012	17,4	11480,6
2013	16,8	9562,6
2014	16,1	7695,9
2015	17,3	13813,7
2016	18,9	23229,5
2017	16,2	9117,5
2018	16,4	12180,1
2019	15,8	14220,9

Source: Data for 2014-2019 are presented without considering the temporarily occupied territory of the Autonomous Republic of Crimea, the city of Sevastopol and part of the temporarily occupied territories in the Donetsk and Luhansk regions. Data for 2016 are given according to the results of state statistical observation according to the form "Survey of innovative activity of enterprises for the period 2014-2016" (according to the international methodology). Compiled according to the State Statistics Service (Naukova ta innovatsiina diialnist, 2021).

The dynamics of financing innovative activities, including in the areas of innovation, is analyzed. The relevant data are presented in table 2.

From the above data, it follows that the bulk of funding for innovative activities is directed to the purchase of machinery, equipment and software, that is, to replenish modern fixed assets. However, different directions of financing innovative activities demonstrate multidirectional dynamics. In particular, during 2011-2016. the volume of funding for research and development increased, but in 2012, 2013 and 2014. the volume of financing for the purchase of machinery, equipment and software decreased. This can be explained by various factors influencing different directions of financing innovative activities. The level of funding for the creation of innovative fixed assets is influenced, in particular, by provisions on tax depreciation.

According to the State Statistics Service, among the types of economic activity, the leaders in the number of innovatively active enterprises are the food industry (production of food, beverages, and tobacco products) and mechanical engineering. At the same time, mechanical engineering is the leader in the number of enterprises engaged in the acquisition of machinery, equipment, and software (Naukova ta innovatsiina diialnist, 2021).

Enterprises for the coke production and petroleum products, chemical and petrochemical industries, as well as mechanical engineering demonstrate a large average innovation activity in Ukraine. However, enterprises in the mining industry, furniture and pulp and paper industry, and publishing one are innovatively passive. This is primarily due to the different economic conditions in the industries, which are caused by the action of objective factors (profitability, resource provision state, the working capital availability, management traditions, etc.) (Zakharin, p. 124).

Table 2 – Areas of financing innovative activities in the Ukrainian economy, mln. UAH

Year	the total amount of funding for innovations	including by areas			
		Research and development	acquisition of other external knowledge	the purchase of machines, ment and software	other expenses
2000	1760,1	266,2	72,8	1074,5	346,6
2010	8045,5	996,4	141,6	5051,7	1855,8
2011	14333,9	1079,9	324,7	10489,1	2440,2
2012	11480,6	1196,3	47,0	8051,8	2185,5
2013	9562,6	1638,5	87,0	5546,3	2290,9
2014	7695,9	1754,6	47,2	5115,3	778,8
2015	13813,7	2039,5	84,9	11141,3	548,0
2016	23229,5	2457,8	64,2	19829,0	878,4
2017	9117,5	2169,8	21,8	5898,8	1027,1
2018	12180,1	3208,8	46,1	8291,3	633,9
2019	14220,9	2918,9	37,5	10185,1	1079,4

Source: Data for 2014-2019 are presented without considering the temporarily occupied territory of the Autonomous Republic of Crimea, the city of Sevastopol and part of the temporarily occupied territories in the Donetsk and Luhansk regions. Data for 2016 are given according to the results of state statistical observation according to the form "Survey of innovative activity of enterprises for the period 2014-2016" (according to the international methodology). Compiled according to the State Statistics Service (Naukova ta innovatsiina diialnist, 2021).

Innovative activity is higher at enterprises with a large number of employees. In addition, it was in the groups of large enterprises with more than 1000 employees that positive changes in innovative activity took place. The innovative activity of small industrial enterprises with up to 50 employees is 14 times less than the innovative activity of enterprises with more than 5,000 employees. In other words, large enterprises show a relatively high propensity to innovate. This is not surprising, because such entities, as a rule, are created on the basis of high-power machine-building plants built in Soviet times, producing unique (including the best in the world) products. For many such enterprises, the development and implementation of innovations is not only a condition for maintaining competitiveness but also a technological necessity.

Indicators of financing innovation activities show a weak correlation with indicators of macroeconomic development. The main reasons for this phenomenon are the inconsistency of the state support policy for innovative activities, the high "latency" of innovation and technological transformations (the overwhelming majority of enterprises do not report on the development and implementation of innovations), and the methodological imperfection for collecting and processing the relevant data.

Based on calculations made according to the State Statistics Committee of Ukraine, it was established that in Ukraine during 2000-2019. the share of investment and current financing of innovative and technological activities from all sources is 2.1-2.4% of GDP per year.

The largest share of funding for innovative activities is formed in mechanical engineering (which is not surprising, since this industry is traditionally prone to innovation).

The number of enterprises that carried out financial expenditures on research and development tends to fall. It suggests that the real sector of the economy is losing incentives to invest in its own industrial research and development - the most important and significant component of the innovation process.

It is analyzed tendencies of innovative activity in the context of its funding sources. Data on the funding sources for innovative activities are presented in the table. 3.

The data show that the bulk of funding for innovative activities is carried out at the expense of the own sources of enterprises and organizations. Approximately 2/3 of innovation expenditures are financed by companies and organizations' own funds. It is a natural phenomenon since the own funds of enterprises and organizations are the most affordable source of financing. In addition, the indicated source showed certain adaptability during the aggravation of the crisis. Therefore, when forming the state innovation policy, the specified properties of the own funds of enterprises and organizations should be considered. It is this source that is the most reliable in the context of investment projects that determine the prospects for economical structural restructuring.

Though, the share of this source has an unstable trend, which is explained by the rapid expansion of the use of credit resources to finance innovative activities in certain years.

Before the financial and economic crisis of 2008, the role of the credit resource in financing innovative activities was growing, and at a sufficiently high rate. It testifies the attempts of enterprises to finance innovative activities even without "reinforcement" with internal resources, which may indicate the presence at the micro-level of a sufficient level of promising innovative and technological projects. Subsequently, the share of credit resources in the overall structure of financing innovative activities decreased (including three times in 2009), which was a consequence of the limited availability of credit resources for most enterprises under the influence of the aggravation of the financial and economic crisis. It follows from the data that the credit resource for investing in innovative activity is important only in the short term, and with the aggravation of negative phenomena of cyclical development, this resource becomes unavailable for innovators.

Table 3 – Sources of industrial enterprises innovative activity financing, mln UAH

Year	Total funding	Including at the expense of			
		Own	State budget	Foreign investors	Other sources
2000	1757,1	1399,3	7,7	133,1	217,0
2010	8045,5	4775,2	87,0	2411,4	771,9
2011	14333,9	7585,6	149,2	56,9	6542,2
2012	11480,6	7335,9	224,3	994,8	2925,6
2013	9562,6	6973,4	24,7	1253,2	1311,3
2014	7695,9	6540,3	344,1	138,7	672,8
2015	13813,7	13427,0	55,1	58,6	273,0
2016	23229,5	22036,0	179,0	23,4	991,1
2017	9117,5	7704,1	227,3	107,8	1078,3
2018	12180,1	10742,0	639,1	107,0	692,0
2019	14220,9	12474,9	556,5	42,5	1147,0

Source: Data for 2014-2019 are presented without consideration the temporarily occupied territory of the Autonomous Republic of Crimea, the city of Sevastopol and part of the temporarily occupied territories in the Donetsk and Luhansk regions. Data for 2016 are given according to the results of state statistical observation according to the form "Survey of innovative activity of enterprises for the period 2014-2016" (according to the international methodology). Compiled from State Standards of Ukraine (Naukova ta innovatsiina dialnist, 2021).

Funding for innovative activities from budgetary resources is unstable. This may indicate the absence of budgetary policy priorities for financing innovation. One of the reasons for this state is

the lack of a long-term budget strategy, as well as an effective mechanism for medium-term budget planning.

The indicators of financing innovative activities at the expense of foreign investors are also unstable. So, in 2013, at the expense of this source, expenses were incurred in the amount of UAH 1253.2 million, and in 2016 - UAH 23.4 million, that is, almost 53 times less.

One of the indicators of the effectiveness of financing innovative activities is the volume of sold innovative products (Levchuk et al., 2015). According to the available calculations, on average, industrial enterprises of Ukraine during 2005-2019, per one hryvnia, spent on innovative activities, received 4.14 hryvnias of income from the sale of innovative products. The enterprises of the extractive industry, mechanical engineering (which are generally more inclined to innovations), and the production of wood (furniture industry) were in a more attractive position. The outsiders are enterprises for the production and distribution of electricity, gas and water, the pulp and paper industry and the publishing industry, which traditionally do not demonstrate high innovative activity.

Enterprises for electricity, gas and water production and distribution, the food industry, the pulp and paper industry, the publishing industry, the wood production (furniture industry) increased the sales of innovative products more actively than the industry average. The enterprises of consumer goods manufacturing, as well as other industries (primarily due to metallurgy and metal processing), performed worst of all.

Most of the implementation of innovative products in the total volume of sold products belongs to enterprises of mechanical engineering, chemical and petrochemical industries (these industries are innovative leaders), as well as enterprises of the furniture industry (in terms of innovative activity, this industry is an outsider). A smaller share of the implementation of innovative products in the total volume of sold products belongs to enterprises of consumer goods manufacturing, coke production and petroleum products, electricity, gas and water production and distribution, as well as other industries (primarily due to metallurgy and metal processing). In addition to the coke production and refined petroleum products, these industries also fall behind in terms of innovation activity.

According to the indicator "the innovative activity ratio of enterprises to the share of innovative products sales in the total volume of sales", the leading sectors are those that received relatively small income from the sale of innovative products (in relative terms) with a significantly higher level of innovative activity. It can be assumed that relatively many, but low-budget, innovative projects are being implemented at the enterprises of these industries, which have a significant payback period. This is the case in the electricity, gas and water production and distribution, the coke production and petroleum products, at consumer goods manufacturing.

The analysis of the financing of innovative activity in industry shows that the main reason for the low innovative activity of enterprises should be recognized as the lack of long-term motivation for organizing high-performance innovative activity. According to available surveys, innovative activity is low-profit (low-profit) and more risky compared to other types of activity. Therefore, the task of the state is to create an efficient and adequate support system for innovators. This system enables to carry out highly productive innovative activities at least in priority areas of the economy.

In the investment sphere of the Ukrainian economy, a protracted crisis continues, which does not enable to solve current production problems. Moreover, currently it is impossible to develop programs for the implementation of innovative projects (Kvasha, 2016). Without a significant improvement in the investment climate, both the activation of innovative activity in industry and the transition of the economy to an innovative development model, are impossible.

In the development of the domestic economy, the prevailing trends are opposite to the global ones (Marchuk, 2011, c. 205). During the crisis in Ukraine, a radical change in the economical

structure took place in favor of the low-tech and raw materials industries that still remain. The recovery growth recorded in the pre-crisis period was based mainly on the raw materials industries and primary processing. Accordingly, on the world markets, Ukraine is represented mainly by raw materials and semi-finished products (Prokhorchuk, 2015). The growth was mainly due to extensive factors. With such a structure of the economy, in which the manufacturing industry and mechanical engineering are given an insignificant place, an innovative model of economic development, even of an industrial type, cannot be implemented and post-industrial development is impossible).

According to our assessment, the state is now paying insufficient attention to the issues of stimulating investments in high technologies. The issues of enhancing the investment and innovation activities of enterprises operating in the industries of higher technological structures, maintaining (guaranteeing) the proper profitability of conscientious investors, reforming the depreciation policy in accordance with recognized world practice (Zakharin, 2011, Levchuk N.I. et al., 2015) have not been resolved. It holds back the transition of the economy to an investment and innovation model of development and preserves its imperfect structure.

During 2016-2019 the decline in the share of investments in intangible assets in the overall structure of capital investments is recorded. This is due to the manifestation of the general investment crisis caused by the financial and economic crisis and the deterioration of the investment climate, as well as the rapid decline in the interest of domestic and foreign investors in the acquisition of intellectual property for the purpose of their commercial use (Semenenko, 2019, p. 58).

In relation with methodology, the main reason for insufficient funding for innovative activities should be recognized as insufficient motivation of investors and entrepreneurs to implement innovative projects (it is subject to a relatively unattractive investment climate). It can be highlighted the key characteristic features that hinder the formation of rational models and mechanisms for financing innovative activities (Boiko, 2015, Hrytsenko, 2016, Yehorov, 2016, Kvasha, 2016, Semenenko, 2019, Fedulova, 2013, Zakharin, 2011, 2015):

- the absence in Ukraine of a single scientifically substantiated list of priority sectors (types of industrial activities) that require funding for innovative activities using state support instruments;
- limited potential for attracting foreign investment in the high-tech sector, including due to the suspension of privatization (further attraction of foreign investment will depend on the promptness of removing unjustified administrative barriers);
- failure of mechanisms to ensure effective competition,
- too low level of protection of the legal rights of investors who invest in innovative activities;
- the lack of practice of using tools of preferential taxation of conscientious innovators;
- the lack of a legislative framework and practice of using instruments of public-private partnership in the field of financing innovative activities;
- general economic and financial instability, including high inflation.

The creation of a favorable investment climate remains a matter of strategic importance. It can attract investment and maintain mobility in the implementation of innovative projects. Accordingly, the main institutional task of the state innovation policy should be the creation of a highly attractive economic and legal environment that activates the investment process in the priority areas of the real and infrastructural economical sectors.

Effective financing of innovative activities can be provided in the conditions of the functioning of a modern innovation infrastructure. Industrial parks are one of the key issues, as has been noted in the scientific literature (Boiko, 2015, Hrytsenko, 2016). Industrial parks, if properly organized, can serve as a factor in the inflow of investments (including venture capital) using the forms of innovation financing approved by the world practice.

A significant increase in the volume of financing for innovative activities is possible only if investment expectations improve (increasing the attractiveness of the investment climate). However, in Ukraine there are many systemic threats for investors such as further exacerbation of

the economic crisis, high inflation, currency instability, an undeveloped and unpredictable legal environment, shortcomings of the system of state rule (in particular, in the areas of protection of the rights of owners and the spread of "raiding", discipline of acts), a high level of corruption, shadow economy (Kvasha, 2016, Prokhorchuk, 2015, Zakharin, 2011).

It can be highlighted the significant imbalances in sectoral development, leading to the concentration of investment in narrow market segments. The existing obstacles in Ukraine to the implementation of the priorities of the investment climate formation are of a systemic nature, including the organizational and legal, economic, innovation-technological and financial components.

Consequently, almost all forms and instruments of state policy to support stimulating the financing of innovative activities need optimization. A reasonable transformation of depreciation, fiscal (budgetary and tax), credit, technological, and foreign economic policies is needed, adequate to the existing challenges.

Depreciation policy plays an extremely important role in stimulating investment and innovative investments in industry (Tyvonchuk, 2007). The legislation of many countries provides for a special preferential procedure for the depreciation of fixed assets used for innovative activities by introducing accelerated depreciation rates or complete immediate write-off of their value. There are two main models of accelerated depreciation: a decrease in the duration of the useful life of equipment, as well as the establishment of increased rates of depreciation deductions in the first years of its operation and reduced rates in subsequent years. Additional monetary receipts resulting from this enterprise become an important financial source of innovative development. They are an incentive for enterprises carrying out technological renewal.

Another area of state financial support for innovation processes and the stimulation of raising funds for innovative activities of enterprises are activities in the financial and credit sphere. Their need is due to the high risk of innovation, a long, as a rule, implementation period (until the expected financial results are obtained), high interest rates, etc., which complicates and sometimes makes it impossible to obtain loans or other types of external financing for carrying out innovation. In the world practice, such incentives are carried out through preferential taxation and the provision of certain preferences to the subjects of financing innovations, in particular, commercial banks that lend to innovative activities of enterprises, namely:

- income tax rate reduction for commercial banks providing long-term lending to innovative projects;
- tax exemption of a part of bank income invested in the shares of enterprises producing high-tech innovative products;
- obligatory fund reservation rate reduction;
- preferential refinancing of banks that provide loans for the implementation of innovation projects;
- granting the right to participate in the future income of a funded innovation project, etc.

The use of levers to stimulate investment in the high-tech sector of the economy should be carried out on the basis of targeted comprehensive programs. Such programs are the predominant form of nationwide management of investment development in the context of transformational economies.

The procedure and methods for developing targeted comprehensive programs in the investment sphere are based on the principles of program-targeted planning proposed by Soviet scientists. The most important of these principles (Zakharin, 2011, p. 288):

- the purposefulness of the development activities;
- a systematic approach to the development and implementation of programs, i.e. taking into account in the interconnection of the whole set of factors influencing the development of the programming object: organizational, technological, legal, administrative political;

- complexity, that is, the mutual linking of individual elements of the program: targets, a set of measures and resources necessary for the implementation of the program, the final results;
- resource endowment, that is, the availability of the necessary resources for the implementation of program measures.

The dynamics of investment in high-tech industries will be positively influenced by the systemic coordinated work of various government and administrative bodies - both central (functional and sectoral competence) and local.

Partial participation of the state in financing innovative (high-tech) projects is an effective means of direct government regulation in terms of attracting private investors. Public funds can be not only through direct financing, but also in the form of government guarantees for the repayment of loans to commercial banks and other financial organizations participating in the financing of such projects. When forming a package of investment projects, it is rational to use the competitive selection of applicants for state support, taking into account the criteria enshrined in the Law of Ukraine "On Innovation Activity" (Kvasha, 2016, Zakharin, 2011). The main selection criteria are compliance with the priority areas of socio-economic development of the project, cost and economic efficiency. The expertise of such projects is advisable to be carried out in the "one-stop shop" mode.

The presence of a significant volume of the shadow sector of the economy, which is inherent in undeveloped and transformational economic systems, including for Ukraine, provides a high share of innovative self-financing (especially in the sector of industrial corporations). This is due to the reluctance of the owners of enterprises and management to provide reliable and timely information on the results of production activities, as well as the underdevelopment of mechanisms for monitoring the implementation of attracted resources.

In Ukraine, innovative technologies for attracting and using investment resources are practically not used, the practice of new (non-traditional) mechanisms for attracting investments is mostly fragmentary or ineffective. In particular, the analysis of business practice allows us to assert that in Ukraine there are no sufficiently favorable prerequisites for the development of venture business (Horodianska, p. 37). This is due to the low information transparency of the intellectual property market, which leads to significant difficulties in finding recipient enterprises and innovative projects for venture capital investments. There is practically no proper regulatory and methodological base regulating the activities of the venture business.

4. Conclusions

During the crisis in Ukraine, there was a radical change in the structure of the economy in favor of low-tech and raw materials industries, which still persist. The recovery growth recorded in the pre-crisis period was based mainly on the raw materials industries and primary processing. Accordingly, on the world market, Ukraine is represented mainly by raw materials and semi-finished products. With such economic structure, where the manufacturing industry and mechanical engineering are less significant, an innovative model of economic development, even of an industrial type, cannot be implemented (not to mention post-industrial development).

It also can be noted significant imbalances in sectoral development, leading to the concentration of investment in thin market sectors. The existing obstacles to the implementation of the priorities of the investment climate formation in Ukraine are of a systemic nature and cover the legal, economic, scientific, technological and financial components.

During periods of exacerbation of economic crises, enterprises experience a reduction of all sources for innovation funding. External sources of investment resources (primarily credit) are rapidly declining, and the monetary characteristics of the economy are deteriorating. As a result of the reduction in effective demand in the domestic and foreign markets, the working capital is

“washed out”, which, through the amortization mechanism, leads to the so-called fixed capital consumption.

During the financial and economic crisis, it is the innovation sector that suffers the greatest losses, since innovation expenditures by their nature are long-term investments with a previously unknown economic result. Significant fluctuations in the volume of financing innovative activities from the state budget, local budget funds, public funds for individual housing construction, through bank loans and other loans indicate that these sources are unstable, but they have a noticeable effect on the overall spending dynamics. Due to the absence of macroeconomic conditions for the formation of an adequate financial resource in terms of volume, it is impossible to implement the scenarios of the so-called “innovative and technological breakthrough”. Consequently, the Ukrainian economy in the coming years will be focused on supporting simple reproduction, which will be accompanied by the consumption of innovations and technologies that come with foreign investment.

In terms of financing innovative activities, machine-building enterprises are the most active, since this industry is traditionally prone to innovation. The innovative activity of the consumer sector is low (this sector includes the types of economic activities, the main products of which are aimed at ensuring final consumption by the household sector – food industry, consumer goods manufactory, paid services to the population, housing construction). Negative tendencies were recorded in the investment of innovative fixed assets in the form of the new technology acquisition and the acquisition of machinery, equipment, installations, and other fixed assets.

The solution to the problem of increasing the volume and improving the structure of financing innovative activities should be carried out on the premise of state regulation. Almost all forms of state support for enhancing the investment and innovation process in industry need to be improved. There is a need for a transformation of depreciation, budgetary and taxation, credit, technical and technological, foreign trade policies that is adequate to up-to-date requirements.

It is also reasonable to modernize the methodological foundations for the development of targeted comprehensive programs implemented in the innovation sphere. These programs should consider the possibility of using appropriate instruments inherent in different areas of state financial policy, primarily budgetary and taxation.

In order to stimulate the financing of innovative activities, it is necessary to introduce public-private partnership instruments. For the implementation of the relevant programs, a certain amount of funding must be provided from the state budget. Justification of the corresponding costs should be carried out in accordance with the principles of the program-target planning method.

An effective means of direct government regulation in terms of attracting private investors to the implementation of innovative (high-tech) projects is partial participation of the state in their financing. Possible application of various instruments: direct government funding, provision of government guarantees, joint (with a private partner) entrepreneurship (with or without creation of a legal entity). This task should be carried out on the basis of an open competition. The key criteria for selection are compliance with priority areas of socio-economic development, cost and economic efficiency of the project. The expertise of such projects is advisable to be carried out in the “one stop-shop principle” mode.

It is advisable to stimulate a conscientious venture business, which inherently tends to the implementation of innovative activities. The tools for the administration of intellectual property recognized by the world practice should be introduced.

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6. Competing interests

The authors declare that they have no competing interests

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