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UDC 336.564.2

JEL: A19; L42; O31

DOI: <https://doi.org/10.32983/2222-4459-2023-11-147-160>

INCENTIVES FOR THE TRANSFORMATION OF INNOVATIVE DEVELOPMENT IN CONDITIONS OF LIMITED ACTIVITY

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UDC 336.564.2

JEL: A19; L42; O31

Vnukova N. M., Hryhorian O. O. Incentives for the Transformation of Innovative Development in Conditions of Limited Activity

The search for incentives for the transformation of innovative development in the context of limited activity is an urgent issue in the conditions of martial law and post-war recovery. Through the government support, grants, tax incentives, and the formation of innovation funds, the State takes an active part in the process of transformation of the economy. Innovation is seen as a direct indicator of the impact on the profitability of an enterprise. Foreign markets remain a priority in export-import activities, especially in the context of a limited activity of the latter. Achieving the indicators of profitability and competitiveness affects the state of export-import activities. The aim of the article is to present the theoretical principles and provide practical recommendations for finding incentives for the transformation of innovative development in conditions of limited activity – taking into account the experience of the EU, research of scholars, legislative norms in the field of economics; substantiation of the feasibility of their implementation during martial law and in post-war conditions with limited activities. In the analysis, systematization, generalization of scientific works of both domestic and foreign scholars, the relevance of views on innovative processes, their significance in the development of the State economy during martial law and prospects for development in the post-war period is considered. The views on «tax incentives of the investment and innovation process», which are constantly being improved in accordance with the requirements of the time, are systematized. It is defined that in Ukraine the State, in comparison with the EU countries, is not an active participant in the innovation and investment process, the indicators of its participation in expenditures on innovation and public investment in relation to GDP are much lower than in the EU. The current approaches of the EU to funding expenditures on innovations, the development of various platforms, the search for mechanisms for intensifying innovation activity, in particular through startups, are considered. The Google-supported assessment of the level of interest in startups showed that the English-speaking audience searches for this topic most often. As for Ukrainian-speaking users, the search trends for startups and innovations coincide. Prospects for further transformation of innovation and investment development are the introduction of mechanisms and forms of the digital economy.

Keywords: investments, innovations, implementation mechanism, residents of Diia City, incentives for the innovation and investment process, digital economy, participation of the State.

Fig.: 1. **Tabl.:** 6. **Bibl.:** 44.

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УДК 336.564.2

JEL: A19; L42; O31

Внукова Н. М., Григорян О. О. Стимули для трансформації інноваційного розвитку в умовах обмеженості діяльності

Пошук стимулів трансформації інноваційного розвитку в умовах обмеженості діяльності є актуальним питанням в умовах воєнного стану та повоєнного відновлення. Через державну підтримку, гранти, податкові стимули, формування інноваційних фондів відбувається активна участь держави у процесі трансформації економіки. Інновації розглядаються як прямий показник впливу на прибутковість підприємства. Закордонні ринки збуту залишаються пріоритетними в експортно-імпортній діяльності, особливо в умовах її обмеженості. Досягнення показників рентабельності та конкурентоспроможності впливає на стан експортно-імпоротної діяльності. Мета статті полягає у викладенні теоретичних засад і наданні практичних рекомендацій щодо пошуку стимулів для трансформації інноваційного розвитку в умовах обмеженості діяльності – з урахуванням досвіду ЄС, досліджень науковців, законодавчих норм у сфері економіки; обґрунтування доцільності їх впровадження під час воєнного стану та в повоєнних умовах за обмеженості діяльності. При аналізі, систематизації, узагальненні наукових праць вітчизняних і зарубіжних науковців розглянуто актуальність поглядів щодо інноваційних процесів, їх значущості в розбудові економіки держави в період воєнного стану та перспективи розвитку в повоєнний період. Систематизовано погляди щодо «податкових стимулів інвестиційно-інноваційного процесу», які постійно вдосконалюються відповідно до вимог часу. Визначено, що в Україні держава, порівняно з країнами ЄС, не є активним учасником інноваційно-інвестиційного процесу, показники її участі у витратах на інновації та державне інвестування стосовно ВВП значно нижчі, ніж в ЄС. Розглянуто сучасні підходи ЄС до фондування витрат на інновації, розробки різних платформ, пошуку механізмів активізації інноваційної діяльності, зокрема через стартапи. Оцінка засобами Google рівня зацікавленості стартапами показала, що англomовна аудиторія найчастіше у світі здійснює пошук цієї теми. Щодо українomовних користувачів, то пошукові тренди щодо стартапів та інновацій збігаються. Перспективами подальшої трансформації інноваційно-інвестиційного розвитку є впровадження механізмів та форм цифрової економіки.

Ключові слова: інвестиції, інновації, механізм впровадження, резиденти Дія Сіті, стимули інноваційно-інвестиційного процесу, цифрова економіка, участь держави.

Рис.: 1. **Табл.:** 6. **Бібл.:** 44.

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The modern model of the economic development of our country is being formed in the circumstances of martial law and limited activities, while attempting to contrive an effective mechanism to stimulate the processes of transformation of innovative development, particularly export-import activities, in order to ensure the structural reconstruction of the post-war economy [5]. Scholars assume that the procedure for regulating foreign economic activity (hereinafter referred to as FEA) under martial law has certain constrictions, resulting from the limited capabilities of economic entities [28]. It is further determined that the complexity

The article is based on the fundamental, State budget-funded research work «Ensuring the innovative development of export-import activities of economic entities of the public sector of the economy under the martial law and in the post-war context» (State registration No. 0123U102012).

of such circumstances necessitates the search for new mechanisms of influence on FEA, along with directions for the use of stimulation instruments.

The prerequisites for the formation of incentives for the innovation activity in the current constricted conditions are the following:

- ✦ the socioeconomic situation in the post-pandemic, wartime, and post-war periods at different levels of government administration and regulation, which does not accelerate the introduction of a system of incentives for the development of innovations;
- ✦ different initial conditions for introduction of innovations;
- ✦ the level of economic opportunities to stimulate the development of innovations at different levels of incentives, in particular, the State-based;

- ✦ development and release of competitive goods and services aiming at the development of new markets, etc.

Over the next 3–7 years, the quantity of qualified labor resources outflowing from the civilian sector to the military sector, or going abroad, will become a limiting factor with respect to the search for innovators for the economic sector, in particular, for the State-owned enterprises. Considering the high probability of strengthening the trend towards a further reduction in the number of permanent population in Ukraine, which poses an additional limiting factor, one does not only express worries about scarcening of the domestic demand in the particular field of innovation, but also becomes concerned with decrease in the technological, financial, and human resources that should be necessary for securing the further development of digitalization of the Ukrainian economy.

Overcoming the risks of limited activity can occur through the formation of incentives for the transformation of innovative development [3], particularly, in terms of export-import activities.

Significant attention was paid to the study of theoretical and practical aspects of the transformation of innovative development of economic entities during the wartime and in the post-war period by scholars such as V. Ponomarenko, L. Malyarets, I. Barannik, Yu. Baliuk [25]; the topics of tax incentives for the introduction of innovations, investment support of business entities, were given attention by such scientists as B. Russo [41], M. Kyzym and L. Kasianova [39], A. Nikitishyn, M. Pasichnyi [24], I. Chuhunov, A. Nikitishyn [33], K. Sochka [29] and others; the topic of fintech acting as support for the State-owned, investment, venture funds was discussed by A. Mazaraki, S. Volosovych [18], M. Krupka, N. Demchyshak, O. Shchurevych [17], L. Kolinets, S. Radynskyi [16]; many scholars considered the theoretical and practical aspects of the knowledge resource, analyzed the transitional processes of the European integration level [2], concerned themselves with the prospects for the development of the post-war economy of Ukraine.

A significant number of scholars in their research paid attention to various directions of stimulation of innovative development, mostly selecting one particular topic in accordance with the personal priority. Conditions of limited activity would not come into consideration for such issues. Furthermore, it is also important to study the EU experience to find directions for the transformation of innovative development that make use of various tools of global and local application. The topic of searching for incentives for the transformation of innovative development in the context of limited activity is relevant and constitutes a part of the general trend of emphasis for innovation.

The *aim* of the study is the theoretical foundations and practical recommendations for finding incentives

for the transformation of innovative development in the context of limited activity, taking into account the experience of the EU.

It is necessary to carry out an analysis of the reasons that hinder the development of innovation activity and reduce the efficiency of its function. One of the main reasons appears to be the insufficiently formed scientific and methodological base of the State-controlled innovation system, which lacks efficiency in the context of limited activities of business entities, slows down the process of European integration, and does not facilitate entering new world markets.

The functioning of this system requires a priority policy on the part of the State, a developed system of science and education, a competitive producer of goods and services, formation of incentives for innovation activities.

The present study pays special attention to the analysis of the State support of the innovation process as compared with the EU countries.

In the course of the study, the general scientific empirical research method was used, i. e. observation, description, analysis and synthesis of scientific publications of scholars who study the issues of incentives for innovation activity, their importance for the economy, social sphere, economic development of economic entities, support of innovation activity. A comparative analysis of statistical data on the proportion of public spending on innovation in the GDP of Ukraine and of the EU countries is carried out, in particular the use of new innovation platforms, the introduction of smart specialization for the development of innovations, the dynamics of the share of public investment in GDP, the importance of investment and innovation expenditures from 2020 to 2022 in Ukraine relative to the EU with the establishment of regularities of development of both the investment and innovation costs. The existing current composition of residents of the Diia City platform by country and the quantitative composition of residents by areas of their activities are analyzed. The modern search tool Google Trends was used to determine the quantitative parameters of interest in the topics of «startups» and innovations, allowing to evaluate the trends for the recent period both in Ukraine and in the world with the allocation of the regional component.

Scholars such as V. Ponomarenko, L. Malyarets, I. Barannik, Yu. Baliuk [25] paid special attention to the problems of transformation of innovative development regarding the activities of economic entities during the wartime and concerning the post-war conditions, thus creating a scientific basis for the development of effective managerial measures both at the regional and international level to choose the best option for the development of not only their region, but also at the macro level during the period of hostilities and in the post-war recovery.

Among the incentives for innovation activity, prioritized and allocated are the issues of tax incentives for

the introduction of innovations and support for investment business at enterprises, that were elaborated by such scholars as B. Russo [41], M. Kyzym and L. Kasianova [39], A. Nikitishyn, M. Pasichnyi [24], I. Chuhunov, A. Nikitishyn [33], who studied the concept of «tax incentives of the investment and innovation process», having come to the following conclusions, which are summarized in the *Tbl. 1*.

It can be seen from the *Tbl. 1* that «tax incentives» is a factor contributing to the well-being of society, stimulating the innovation and investment activity of economic entities. In general, all researchers consider tax incentives from different angles: on the one hand, these are mostly tax preferences of various types (low rates, benefits); on the other hand, the consideration alludes to the results of stimulation by means of arisen budget revenues and increased competitiveness. We support the opinion of scholars regarding tax incentives for certain categories of innovators, which will significantly increase competitiveness and encourage them to invest in the development of the economy in the post-war recovery period. The study of the components of tax incentives of the innovation and investment process should be deepened by taking into account the current conditions of limited activity, because privileges and preferences also are, aside from incentive, protectionist in nature, which violates the principles of free competition, and the latter is an important lever for market development. For that matter, a balance of results should be achieved to ensure proper insti-

tutional conditions for the development of the economy, so that tax incentives are equally beneficial to economic entities and to the State in terms of tax collection and the formation of budget revenues.

The behavior of economic entities is influenced by the duration of tax transformations and also the level of stability of tax legislation. The challenges of martial law and the conditions of limited activities should be effectively taken into account for tax incentives for the innovative component of export-import activities, which can provide the basis for the post-war recovery.

Among the factors influencing the intensification of innovation activity of industrial enterprises of Ukraine, a low level of stimulation of small and medium-sized businesses in the regions is allocated, therefore, the intensification of innovation activity should first of all be defined in the national development program, and clear incentives for the use and generation of innovations have to be included [32].

Taking into account the European integration directions of the Ukrainian economy, especially in the current period, a comparative analysis of the financial participation of the State in the innovation activity of both Ukraine and the EU countries is carried out, as presented in the *Tbl. 2*.

As shown in the *Tbl. 2*, public financial participation in innovation at the EU level is stable and corresponds to the average level of developed countries year to year, the leader of spending has changed, first it was

Table 1

Tax incentives for the investment and innovation process

Author(-s), source	The essence of the concept	Key concept
B. Russo [41]	Lead to a significant increase in welfare, while lower tax rates contribute to the development of innovative businesses	Low rates stimulate the development of innovative business
M. Kyzym, L. Kasianova [39]	Sensitive to deferred payment of income tax, exemption from VAT, preferences for unified compulsory social insurance	Preferential package of incentives by the State for various types of taxes and payments
I. Chuhunov, A. Nikitishyn [33]	The main lever for the formation of the revenue side of the budget (national, local, consolidated), because the state of tax security of the country, the growth of the welfare of society depend on effectiveness of these budgets	The result of the stimulation is associated with the growth of the revenue side of the related budget
A. Nikitishyn, M. Pasichnyi [24]	An important factor in the competition for the redistribution of investment flows, an effective mechanism of the State regulation of the economy. There should be a consistent and transparent tax policy	Supporting the competitiveness and investment flows.
K. Sochka [29]	Preferential conditions for conducting certain types of economic and investment activities, where benefits are provided to certain categories of taxpayers, are directed by the State to support business activity	Preferences and benefits as the State support

Source: summarized by the authors on the basis of [24; 29; 33; 39, 41].

Table 2

The comparative dynamics of public expenditures on innovations relative to GDP in Ukraine and in the EU Countries

Country	Public expenditures on innovations relative to GDP, %				
	2017	2018	2019	2020	2021
European Union	–	–	2.22	2.3	2.26
Belgium	2.47	2.49	3.16	3.35	3.22
Denmark	2.96	2.87	2.93	2.96	2.81
Netherlands	2.0	2.03	2.18	2.31	2.25
Germany	2.92	2.94	3.17	3.13	3.13
Spain	1.24	1.22	1.25	1.41	1.43
France	2.22	2.24	2.19	2.3	2.21
Italy	1.34	1.29	1.46	1.51	1.48
Poland	–	–	1.32	1.39	1.44
Ukraine	0.62	0.48	0.44	0.40	0.28
Ratio of the proportion of Ukraine's expenditures relative to the EU	–	–	0.44/2.22 = 0.20	0.4/2.3 = 0.17	0.28/2.26 = 0.12

Source: summarized by the authors on the basis of [23;37; 43].

Denmark, then Germany, and now Belgium, where in 2020 the proportion was 3.35%, amounting for the highest figure for this period of analysis. As for Ukraine, the priority of the State participation in financing innovation is very low and it is decreasing, with its level at present almost 8.33 times lower than the EU average, and 11.5 times lower than the European leader of 2021, Belgium. This indicates a deep crisis of public funding in the innovation sphere.

Since 2017, the proportion of public spending on innovation in Ukraine's GDP has a steady downward trend, which is an unfavorable reflection of the state of interest in innovation spending. The consequences of the COVID-19 pandemic should have had a certain impact, but significant investments in innovation are needed to recover Ukraine both after the pandemic and the armed aggression.

In 2021, the EU spent € 328 billion for research and development, which is 6% more than in the previous year (€ 310 billion) and, compared to 2011, expenditures increased by 43.9% [37].

In order to find sources of the State-based financing for innovations, it is necessary to consider the general level of financing for investments as an important part of the budget, a share of which can be allocated for the development and implementation of novelties. The *Tbl. 3* shows the comparative dynamics of the share of public investment in the GDP of Ukraine and the group of EU countries.

As can be seen from the *Tbl. 3*, the share of public investment in the EU's GDP over the years has little volatility and remains at the same level of about 3%. The leader of public investment is Poland, where this figure

exceeded 4% and, as for Ukraine, there is a volume that is almost 10 times lower in terms of its share than for the EU, and a general downward trend. Therefore, incentives are necessary to increase the volume of investment. The *Tbl. 4* shows the distribution of the ratio of the proportion of public expenditures on innovations within the share of public investment.

According to the *Tbl. 4*, there is an almost equal proportion of the State's expenditure on innovation to the share of the State's investment in GDP in Ukraine, which can be explained by the low level of the State's investment share in GDP, therefore, against this background, the proportion of the State's expenditure on innovation to GDP can be interpreted as the maximum level possible. Such indicators can be explained by the importance of the status and development of the IT sector, as the most innovative in the economy. The recovery and transformation of the economy occurs to some extent owing to the IT sector of Ukraine, where the number of IT companies increased in 2020–2021 by 22% with computer services and by 10% with information services [12]. As for the EU, there is a clear difference between these indicators, the spending on innovation amounts to 75% of the share of the State's investment.

A hypothesis is put forward about efficiency of Diia City as an European-integrated instrument. Stimulating the development of the digital economy in Ukraine [26] is associated with promoting the interest in the legal mode of Diia City both in Ukraine and abroad, improving the quality of education, developing professions in the digital industry, to correspond with the conception of development of the digital economy and a society, where digital competence is important (not only in Ukraine, but also

Table 3

The comparative dynamics of the share of public investment in GDP in Ukraine and in the EU countries

Country	Share of public investment in GDP by year, %				
	2018	2019	2020	2021	2022
European Union	2.94	3.02	3.29	3.25	3.21
Belgium	2.63	2.60	2.71	2.71	–
Denmark	3.43	3.24	3.62	3.24	3.10
Netherlands	3.42	3.39	3.68	3.43	3.16
Germany	2.37	2.41	2.69	2.60	2.66
Spain	2.15	2.18	2.65	2.75	–
France	3.40	3.65	3.67	3.59	–
Italy	2.13	2.31	2.59	2.91	2.70
Poland	4.65	4.31	4.46	4.13	–
Ukraine	0.47	0.43	0.41	0.29	0.33
Ukraine relative to the EU	0,47/2.94 = 0.16	0.43/3.02 = 0.14	0.41/3.29 = 0.12	0.29/3.25= 0.09	0.33/3.21= 0.10

Source: summarized by the authors on the basis of [21; 37].

Table 4

A comparison of innovation and investment expenditures from 2019 to 2021 in Ukraine relative to the EU

Year	The proportion of the State's expenditure on innovation to GDP, %	The share of the State's investment in GDP, %	The proportion of the State's expenditure on innovation in GDP, %	The share of the State's investment in GDP, %
	Ukraine		European Union	
2019	0.44	0.43	2.22	3.02
2020	0.40	0.41	2.3	3.29
2021	0.28	0.29	2.26	3.25

Source: summarized by the authors on the basis of [21; 23; 37; 43].

for the life and activities of citizens in the EU). The special legal mode of Diia City came into force in Ukraine on February 8, 2022, allowing resident companies to pay taxes at reduced rates. As of March 2023, the register had 498 residents, before the start of full-scale hostilities, there were 79 companies. The related legislation [26] specifies a number of criteria, for instance, residents of Diia City cannot be registered in other countries and have ties with the aggressor country. As of March 2023, 314 companies (63%) in Diia City are of Ukrainian origin (do not have foreign parent companies). The *Tbl. 5* provides a characterization of the activities of Diia City residents. As of September 2023, a total of 686 units have been registered.

According to the *Tbl. 5*, as allocated from the activities of Diia City residents, 60.1% are engaged in computer programming, 6.4% are engaged in wholesale trade in pharmaceutical products, and slightly less (6.3%) provide consulting services on informatization issues. The least number of registered residents are engaged in the construction of power supply and communications facilities, the construction of ships and floating structures, leasing of intellectual property and similar

products, except for works protected by copyright and other activities – each type is 0.15%, in total – 10.64%.

The largest number of non-resident companies are from Cyprus (46 residents of Diia City), in 2nd place is the United States – the companies registered in this country include 42 residents of Diia City. An example of a significant investor involved in improving the economic situation in Ukraine is “AS MANUFACTURING” LLC, which has an authorized capital of almost UAH 28 million. The net profit for 2022 amounted to more than UAH 13 million [15].

Diia City has a special taxation system that can be viewed as a tax incentive, but it is difficult to analyze how its residents invest in innovations.

In accordance with the financial status of a person wishing to become a resident of Diia City, a mechanism has been developed that, at different stages of business development, can be used to introduce innovations. If a taxpayer loses his status as a resident of Diia City taxpayer, then he becomes a payer of corporate income tax on a general basis, starting from the first day of the year following the tax reporting year.

Among the advantages of preferential taxation for Diia City residents are: personal income tax rate of 5%

Distribution of the residents of Diia City

By country of registration			By type of resident's activity		
Country of residence registration	Number of residents	% to the total	Type of activity of the resident	Number of residents	% to the total
Ukraine	483	70.4	Computer Programming	412	60.1
Cyprus	46	6.7	Wholesale trade with pharmaceuticals	44	6.4
The USA	42	6.1	Consulting on the issues of informatization	43	6.3
Great Britain	20	2.9	Production of air and space aircraft, related equipment	23	3.4
Netherlands	12	1.7	Production of other software	20	2.9
Estonia	6	0.9	Advertising agencies	16	2.3
Malta	6	0.9	Research and experimental developments in the field of other natural and technical sciences	14	2.0
Sweden	6	0.9	Other activities in the field of information technology and computer systems	13	1.9
Latvia	5	0.7	Other types of education	10	1.5
France	5	0.7	Production of computer games	8	1.2
Others	55	8.02		73	10.64

Source: summarized by the authors on the basis of [14].

and military levy on personal income of 1.5% under an employment contract, where a specialist receives a salary of up to 240 thousand euros per year, if the income exceeds 240 thousand euros per year, he is subject to personal income tax at a generally determined rate of 18% and 1.5% of the military levy under a special gig contract concluded with a resident of Diia City – personal income tax is taxed at the rate of 5%, a single social contribution – 22% of the minimum wage, military levy – 1.5%; a resident of Diia City has the right to choose the corporate income tax regime: with a rate of 18% on a general basis, with a rate of 9% for such operations as the payment of certain interest, royalties, certain payments in connection with the withdrawal of a member of a resident of Diia City, certain investment operations, goods and services provided free of charge, purchase of goods, services from single tax payers. Thus, more attractive conditions for attracting investors are created by means of the lower level of taxation of wages and compensations [13; 22].

Intending to promote innovation, many countries are stimulating business investment in research and development (R&D). Providing direct government funding for R&D activities is a common approach, and a significant number of jurisdictions offer R&D incentives. According to the Law of Ukraine «On Stimulating the Development of the Digital Economy in Ukraine» No. 1667–IX as amended on 01.01.2023, financial technologies are an important part of the development of a digital

innovative society, the implementation of the activities as defined in Diia City is stimulated by creating a legal mode, and services are to be provided in accordance with this law [26].

In the context of digitalization, the countries of the world, as well as Ukraine, are activating the need to develop new approaches to the implementation of measures that would ensure sustainable development and stable economic growth in society. There is a necessity to optimize business management based on stimulating its innovativeness and taking into account the level of digitalization of modern society, the demand of individuals and legal entities for various digitalized services.

Due to the interaction of stakeholders there is a perspective for economic recovery through communication between engineering and digital companies in both the domestic and the European markets. In the direction of stimulating interest in innovative implementation on the part of business entities, interaction between stakeholders, innovators are being involved in the European-level programs within the framework of Ukraine's national strategic objectives until 2030, such as "Horizon Europe" (2021–2027) [38]. The development of economic recovery is facilitated by the national strategy Industry 4.0, which goals serve as guidance for the APPAU association, making use of the platform Industry4Ukraine [3; 6]. For financial support of innovation activity of enterprises

on the part of the State, the State Innovation Financial and Credit Institution [3], is created, which supports innovation activity by attracting investments.

To support startups, the Ukrainian Startup Fund is established, where businesses can receive a grant from 25 to 75 thousand US dollars. Applications are submitted by fintech companies. The principle that is applied – the higher the volume of venture capital investments, the higher the activity of fintech. Rapid digitalization, although it has disadvantages, will improve the quality and simplify the receipt of financial services, which in turn will increase the level of financial inclusion, and new fintech startups will appear [10]. The *Tbl. 6* shows the target indicators of fintech.

As can be seen from the *Tbl. 6*, the fintech system involves a combination of factors such as the State support and support by investment and venture funds, transparent, open legislation, human capital development embodied through specialists who create innovative financial products, financial digital literacy that develops financial culture, creates new solutions; innovative activity, carried out by innovative enterprises, startups that implement innovative financial and technological solutions; partnership between different stakeholders who contribute to the development of the economy.

In 2022, despite the limited activities due to introduction of martial law, it was the fintech sector that continued to actively develop and attract investment resources, where there was a steady demand for electronic and non-cash payments, developed payment systems,

Internet acquiring, and lending. International support for Ukraine also took place in terms of stimulating the domestic fintech ecosystem Google for Startups in the amount of \$5 million [9].

In Ukraine, the fintech ecosystem is being formed, gradually becoming one of the priority industries, which is facilitated by active processes in various sectors of the digitalization of the economy.

Industrial enterprises should form a management mechanism that will ensure their innovative activity, which would be effective and competitive in both the foreign and the domestic markets. Digitalization based on the introduction of industrial innovations of the Internet of Things (IoT) leads to the transition to mass standardization [27]. This in turn leads to the unification of manufacturing enterprises, contributes to the monopolization of the market by large companies. These features should be taken into account when forming a mechanism for managing the innovative development of an economic entity in the context of Industry 4.0 and the transition to Industry 5.0 [1]. With these changes, there is a high level of renewal of industrial enterprises, so there is a need to develop effective mechanisms for managing economic entities based on stimulating the introduction of innovations that can ensure a high level of competitiveness, despite the limited activity, in the context of the transition to a digital format in the State economy, which can ensure the introduction of smart transformations.

L. Maliuta [19] believes that in modern conditions occurs a «smart» approach to the production of innova-

Table 6

Fintech target indicators

Factors influencing the development of the fintech system in Ukraine	The essence of the proposal for development
Financial support – by the State, investment and venture funds	Active development in the interaction of funds and the State
Regulatory environment – legislation, transparent, open	Interaction has, on the one hand, to stimulate, on the other hand, to support and ensure the protection of consumer rights
Development of technical infrastructure	Fast technology solutions, blockchain, cloud technologies, artificial intelligence, big data, machine learning
Human capital	IT specialists, highly qualified, talented, who create innovative financial products, develop fintech startups
Financial and digital literacy	Awareness, financial culture that promotes popularization and creates new fintech solutions
Innovation activity	Innovative technologies in the context of modern economic development, innovative enterprises, startups that develop and implement fintech solutions
Cooperation of stakeholders	Partnership between different stakeholders of fintech ecosystems that are ready to distribute innovative products and services
Development of business incubators, innovation centers, technology parks, IT clusters, science parks (SP) and industrial parks	Providing financial consulting support, creating conditions for the development and application of innovative technologies by small and medium-sized enterprises

Source: summarized by the authors on the basis of [16–18; 30].

tions in the enterprise, the choice of modern material and technical base, innovative products. I. Markovych [20] considers the concept of «smart» specialization as an opportunity to generate new types of activities, providing for the clear understanding of resources, possibilities of their efficient application, close interaction within a possible cluster, an innovative approach to the company's activities. Smart specializations are important for Ukraine and can be quite an effective tool that will provide a transformational effect for the modernization of the economy.

Smart specialization is a local approach of the European Commission, which is characterized by identifying strategic areas for intervention based on both an analysis of the strengths and potentials of the economy and the entrepreneurial discovery process (EDP) along with broad stakeholder involvement. It is focused on the external environment, which can be useful to Ukraine, and encompasses a broad view of innovations, including, but not limited to, technological approaches supported by effective monitoring mechanisms [44].

The conception of smart specialization can be effectively used in the search for directions of incentives for the development of innovative activities.

The Member States of the European Union adequately contribute to the achievement of the goals through their research- and innovation-based smart specializations, containing a combination of knowledge with priority economic activities aimed at the competitiveness of the State in the world economy. The European Commission has launched the Smart Specialization Platform (S3/S3P) [1]. This platform is based on the region's supports, exploring various options by which smart specialization can be developed and implemented. The S3 concept extends beyond the European Union, 5 regions of Ukraine are too registered on this platform – Zakarpattia, Ivano-Frankivsk, Cherkasy, Chernihiv, and Kharkiv [42].

The European Innovation Council [6], initiated by the European Commission, supports innovators by creating platforms to unfold potential. The funding, provided by the EIC Pathfinder program, amounts to €343 million and is intended for multidisciplinary research teams to conduct research that could lead to technological breakthroughs [36].

EIC Accelerator is a funding platform for SMEs to develop and scale highly impactful innovations to create new markets or disrupt existing ones (€1.13 billion). EIC Transition (€128.3 million) – to translate research results into innovation opportunities [34]. Ukrainian platforms, such as Ukrainian Hub, provide an opportunity to implement innovative solutions, improve business strategy in national startups through the introduction of innovative solutions and the experience of entrepreneurs from the United States and Europe [10]. YEP! Company is an ecosystem of an innovative enterprise that provides the opportunity to participate in incubation and acceleration programs, mentoring and providing grants for startups at an early stage [11].

Interest in innovation is confirmed by an analytical review of the Google Trends service [40], which was used to search for the word «startup» in Ukrainian and in English in Ukraine for the period from 01.09.2020 to 30.09.2023 [35].

The peak of search activity was observed from December 6th to December 12th, 2020 for the word «сраптан» («startup»), the smallest number of queries was from July 30th to August 5th of the same year – 12 points. The greatest interest in the topic of «startup» was shown from September 24th to 30th, 2023 – 49 points, the least interest – from March 7th to 13th, 2021 – 13 points. Rivne, Kherson and their regions were most often interested in Ukrainian language – 65%, while in English language – Lviv and the region – 61%. Interest in these topics around the world is reflected mainly in the word «startup» in English, the highest interest – from May 30th to June 5th, 2021, the least – from November 21st to 27th, 2021 – 49 points. Among the countries of the world, 4% were interested in the word «startup» in Ukrainian language (as «сраптан») in Israel, 2% in Estonia, 1% in Lithuania, the Czech Republic, Poland, and Turkey [35].

A comparative characterization of search for «startup», «innovation» as topics, «Industry 4.0» as search word in the period from 01.09.2022 to 11.11.2023 around the world provides an opportunity to conclude that the largest interest in the topic «innovation» was shown in the period from September 18th to 24th, 2022 – the highest result of 100 points, the indicator of this period for the topic «startup» was 62, interest in the concept of «Industry 4.0» was found at a low level. The greatest interest in the topic of «startup» was shown in the period from October 25th to October 31st, 2023 with an indicator of 76, in the same period «innovation» got 35, «Industry 4.0» – less than 1. The three-year average for the topic of «startup» is at the level of 55, «innovation» is less than 73, «Industry 4.0» is at a low level. The distribution of search queries is shown in the Fig. 1 [35].

As can be seen in the Fig. 1, the information is provided in conventional units, the peak value of the number of search queries is taken as 100. The Fig. 1 uses the Google Trends tool to determine the dynamics of changes in search queries with the search words «startup», «innovation», «Industry 4.0». The most popular among these topics is innovation, but the distribution graph for the topic of startups is similar, it repeats the changes in the topic of innovation, only with a lower value of activity. Interest in the topic of Industry 4.0 is very low.

The use of this tool can contribute to the consideration and search for incentives for transformational changes in innovative development.

CONCLUSIONS

In the course of the study, it was found that an important component of the formation of the transformation of innovative development of economic entities re-

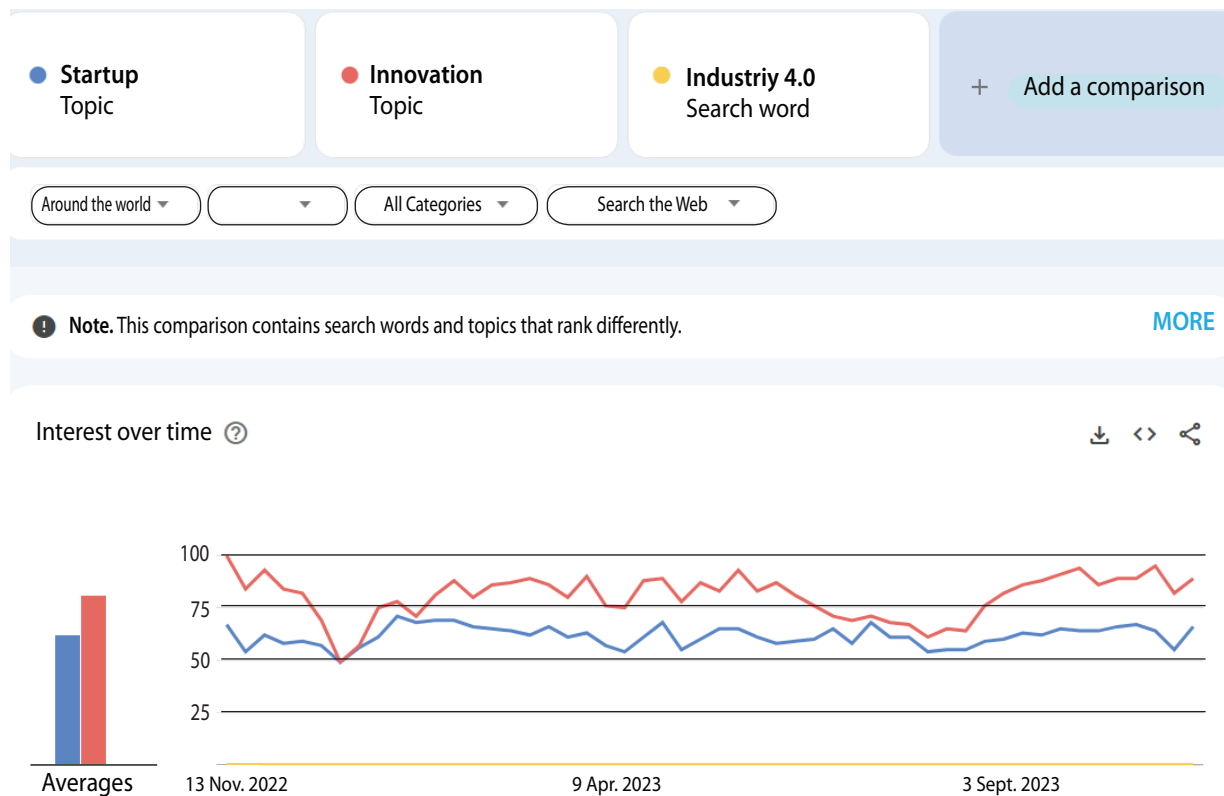


Fig. 1. Dynamics of interest in the search words: «startup», «innovation», «Industry 4.0», 2022–2023

Source: comprised by the authors on the basis of [35].

garding both the wartime and the post-war conditions is the stimulation of innovation and investment processes, particularly with the participation of the State, which would meet the requirements of free competition in the world market, a conception of overcoming negative trends in the functioning of the economic system in crisis periods is developed.

Hedging of risks of limited activity can occur through the formation of incentives for the transformation of innovative development, in particular, in export-import activities.

It is necessary to deepen the study of the components of tax incentives for the innovation and investment process, taking into account the current conditions of limited activity. The contradiction that arises regarding tax privileges and preferences is related to the impact on free competition through protectionism, so a mutually beneficial balance should be achieved between the interests of economic entities and the State to ensure appropriate institutional conditions for economic development.

It is determined that the priority of the State-based participation of Ukraine in financing innovations is very low, which indicates a deep crisis of the State-based financing in the innovation sphere. Since 2017, the share of public spending on innovations in Ukraine's GDP has a steady downward trend, which is an unfavorable reflection of the terms of interest in spending on innovations.

In order to find sources of the State-based funding for innovations, it is necessary to consider the general level of financing of investments as an important part of the budget, the share of which can be allocated for the development and implementation of innovations. The leader of public investment in the EU is Poland, whose experience can be borrowed.

Diia City has a special taxation system that can be viewed as a tax incentive, but it is difficult to analyze how its residents invest in innovations.

The carried out research on the topics of «startup», «innovation», «Industry 4.0», using the analytical search tool Google Trends, showed that innovative transformations of Industry 4.0 are of little interest to users, which is a negative indicator of the potential innovative transformations.

The European Innovation Council, initiated by the European Commission, supports innovators by creating platforms to unfold innovative potential. Significant amounts of funding allocated to multidisciplinary research teams can lead to technological breakthroughs.

The direction of further research can be the search for modern tools for increasing innovation activity and competitiveness of economic entities using modern scientific developments, creating new competitive activities, introducing innovations, structural European integration-based changes to the modernization of the Ukrainian economy. ■

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