CONDITION AND PROBLEMS OF FINANCIAL PROVISION OF INNOVATIVE ACTIVITY IN UKRAINE

СТАН ТА ПРОБЛЕМИ ФІНАНСОВОГО ЗАБЕЗПЕЧЕННЯ ІННОВАЦІЙНОЇ ДІЯЛЬНОСТІ В УКРАЇНІ

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The research examines the current condition of financial provision of innovation activity in Ukraine. It has been established that the main source of financing innovation costs are the enterprises' own funds, the second place by the amount of financing take borrowed funds, and the share of the state budget remains insignificant. The dynamics of financing of strategic and medium-term priorities of innovation activity is analyzed. The main problems of innovation financing are determined as follows: reduction of public financing, underfunding or funding termination of certain scientific and scientific and technical programs; suspension of the current provisions of some laws in the scientific and technical sphere. The improvement directions of innovative activity financing in the context of its legislative support are substantiated, in particular: amending the Budget Code of Ukraine; introducing an effective mechanism of placement of own revenues by higher educational and scientific institutions; amending the Law of Ukraine "On Innovation Activity", which introduce an implementation mechanisms for priorities of innovation activity.
Key words: *innovations, innovation activity, financing, innovation priorities, strategic priorities, medium-term priorities.*

У статті досліджено сучасний стан фінансового забезпечення інноваційної діяльності в Україні. Встановлено, що основним джерелом фінансування інноваційних витрат залишаються власні кошти підприємств, на другому місці за обсягами фінансування – залучені за кредитами кошти, а частка державного бюджету залишається незначною. Проаналізовано динаміку фінансування стратегічних та середньострокових пріоритетних напрямів інноваційної діяльності. Визначено основні проблеми фінансування інновацій, серед яких: зменшення обсягів фінансування з державного бюджету; недофінансування або припинення фінансування певних наукових та науково-технічних програм; призупинення чинних норм деяких законів у науково-технічній сфері. Обґрунтовано напрями вдосконалення фінансування інноваційної діяльності у контексті її законодавчого забезпечення, зокрема: внесення змін до Бюджетного кодексу України; запровадження ефективно діючого механізму розміщення закладами вищої освіти і науковими установами власних надходжень; внесення змін до Закону України «Про інноваційну діяльність», що запроваджують механізми реалізації пріоритетних напрямів інноваційної діяльності.
Ключові слова: *інновації, інноваційна діяльність, фінансування, інноваційні пріоритети, стратегічні пріоритети, середньострокові пріоритети.*

В статье исследовано современное состояние финансового обеспечения инновационной деятельности в Украине. Установлено, что основным источником финансирования инновационных расходов остаются собственные средства предприятий, на втором месте по объемам финансирования – привлеченные по кредитам средства, а доля государственного бюджета остается незначительной. Проанализирована динамика финансирования стратегических и среднесрочных приоритетных направлений инновационной деятельности. Определены основные проблемы финансирования инноваций, среди которых: уменьшение объемов финансирования из государственного бюджета; недофинансирование или прекращение финансирования определенных научных и научно-технических программ; приостановление действующих норм некоторых законов в научно-технической сфере. Обоснованы направления совершенствования финансирования инновационной деятельности в контексте ее законодательного обеспечения, в частности: внесение изменений в Бюджетный кодекс Украины; введение эффективно действующего механизма размещения вузами и научными учреждениями собственных поступлений; внесение изменений в Закон Украины «Об инновационной деятельности», вводящие механизмы реализации приоритетных направлений инновационной деятельности.
Ключевые слова: *инновации, инновационная деятельность, финансирование, инновационные приоритеты, стратегические приоритеты, среднесрочные приоритеты.*

Target setting. The common problem of scientific and technical and innovation activity in Ukraine is the reduction of public financing, underfunding or funding termination of certain scientific and scientific and technical programs. For a long time the requirements of Article 34 of the Law of Ukraine "On Scientific and Scientific and Technical Activity" regarding the public financing of scientific and scientific and technical activities (other than in respect of defence expenditures) in the amount of at least 1,7% of gross domestic product of Ukraine were not fulfilled.

Conducting competitions for the implementation of some relevant state scientific, scientific and technical programs and the development of new ones was terminated. By amending and suspending the current provisions of laws in the scientific and technical sphere, legislation has lost the stimulating factors in the development of science. Implementation of Laws of Ukraine "On General State Complex Program of High Knowledge Intensive Technologies", "On Priorities of Innovation Activity in Ukraine", "On Special Regime of Innovation Activity of Technological Parks" is terminated; implementation of Laws of Ukraine "On Scientific Parks", "On State Regulation of Activities in the Sphere of Technology Transfer" and the State Target Economic Program "Creation of Innovation Infrastruc-

ture in Ukraine" for 2009-2013 is constrained. Therefore, the search for and substantiation of improvement directions for financing of innovation activities in the context of legislative provision are relevant.

Actual scientific researches and issues analysis. Many works of famous foreign and domestic scientists, namely: E. Denison, J.M. Keynes, D. Clark, M. Krupka, R. Lucas, G. Mensch, B. Tviss, R. Harrod, J. Schumpeter, A. Chukhno and others are devoted to the problems of financial provision of innovation activity. The analysis of financing of innovation activity is presented in the scientific works of such scientists as V. Heyets, L.J. Gitman, A. Peresada, V. Semynozhenko, D. Stechko, L. Fedulova and others. Their scientific works contain comprehensive developments on the theory, methodology and organization of financial provision of innovation policy. Alongside with that, it is advisable to assess the current condition and problems of financing innovative activities to substantiate the directions of its improvement in the context of its legislative support.

Formulation of research objectives. The main objective of the article is to study the current condition, identify the main problems of financial provision of innovation activity in Ukraine, and substantiate directions for improving its financing in the legislative field.

The statement of basic materials. In Ukraine, sources of financial provision for innovation activities are as follows: funds from the State and local budgets; own funds of specialized public and municipal innovative financial and credit institutions; own or borrowed funds of entities of innovation activity; funds (investments) of individuals and legal entities; other sources not prohibited by the legislation of Ukraine [1]. In most cases, the mentioned forms are optimally combined in the financial and business activities of the entities of innovation. Each company forms its own model of financial security, which determines the composition and structure of funding sources.

Due to the lack of financing of scientific and technical and innovation activity, modernization processes are inhibited. The current condition and trends of financial provision of innovation activity in Ukraine are characterized by the following features:

– financial constraints remain the main factor inhibiting innovation activity, which is due to the acute shortage of financial resources owned by the entities of innovations;

– shortage of own funds, which are the main source of funding for innovation activity, caused by unsatisfactory financial condition of enterprises, stagnation of industrial production and the inaccessibility of external sources of financing;

– high cost of credit resources, which are the second most important source of financing innovative activity; it complicates their involvement in financing innovative projects, especially for low-profitable enterprises requiring technological modernization and are not able to attract long-term loans for the implementation of innovations;

– lack of a balanced tax policy in the context of decentralization of power, in particular, related to the introduction of a new methodology for normative monetary evaluation of land resources and excessive increase of land tax, leads to a significant reduction or elimination of public-private partnership in the field of innovation development;

– state support for innovation activity in the form of direct financing has significant budget constraints and is not consistent with the priorities of innovation development.

The dominance of mechanisms for self-financing of innovation activity and the limited external sources for attracting funds leads to the preservation of the existing technological structure of the economy, does not ensure the redistribution of financial resources into high knowledge intensive technologies, impedes progressive structural changes in the national economy, which causes the need to improve the legislative provision of financing mechanisms for scientific and technological and innovation activities [2].

The analysis of the financial provision of innovation activity showed that industrial enterprises spent funds 68,2% more on investments in 2016 than in 2015. The share of expenses for the purchase of machinery, equipment and software is the largest and reaches 85,3% of total financing, the share of expenses for R&D makes 10,6%, at that this share decreased in 2016 compared to 2015.

Own funds of enterprises remain the main source of financing innovative expenses (94,9%). Borrowed funds take second place by the volume of financing (2,7%). And the share of the state budget remains insignificant – 0,8% [3].

Innovative activity of higher education institutions and scientific institutions is also financed by priorities of innovation activity at the expense of budget funds. The Law of Ukraine "On Priorities of Innovation Activity in Ukraine" identifies seven strategic priority directions of innovation activity [4]. Within the framework of these strategic priorities, the Cabinet of Ministers of Ukraine identified 53 medium-term priority directions of innovation activity at the national level by its Resolution No. 294 dated March 12, 2012 [5].

According to the results of monitoring of the implementation of innovation priorities, it can be concluded that all seven strategic innovation priorities were financed at the expense of state funds for the total amount of UAH 838,1 million, or 0,01% of GDP during 2012-2016. At the same time, in 2013-2016, financing was almost entirely (by 99,9%), and in 2013 and 2016 – fully (100%) was carried out at the expense of the special purpose fund of the state budget, that is, at the expense of funds earned independently by research institutions and higher education institutions (HEI). Most of the money was spent on the

implementation of R&D on the orders of enterprises (organizations), in 2013-2016, an increasing share (up to 5,6% of the total volume) was invested in "marketing, advertising", that is, in the sale of products.

The largest volumes and the share of funding in 2012-2016 earned institutions and organizations in the framework of the fourth strategic priority "Technological renewal and development of the agro-industrial complex" – from 59,8% of the total financing in 2012 to 59,4% in 2016.

Increase in volumes of nominal financing and the share of total funds earned is also typical for the first, third and sixth strategic priorities (except in 2016). This tendency shows the constant demand for scientific and technological products of agro-industrial, energy, industrial (production of new materials) and environmental profiles.

This dynamics corresponds to the global trends in the need for the development and application of technologies for more economical energy consumption, clean and resource-efficient production and environmental protection, as stipulated in the Paris Agreement in the format of the United Nations Framework Convention on Climate Change related to the reduction of carbon dioxide in the atmosphere and prevention of global warming signed by Ukraine in New York on April 22, 2016.

The strategic priority "Implementation of new technologies and equipment for high-quality medical care, treatment, pharmaceuticals" has been least funded during four of five years (UAH 553,4 thousand or 0,3% in 2012 and UAH 5023,9 thousand or 2,6% in 2016). In 2013, this strategic priority was funded by the National Academy of Medical Sciences for a significantly higher amount (UAH 53612,1 thousand), but all funds were spent outside the medium-term priorities.

The volume of financing of medium-term priorities amounted to UAH 638070,54 thousand or 76,1% in the volumes of financing of strategic priorities during 2012-2016, UAH 153,3 million of which in 2012, UAH 149,7 million (23,5%) in 2016. The largest share of funds (67,8%) is directed to the medium-term strategic priorities for the development of the agro-industrial complex, the smallest (0,8%) – for the medical sector. The largest volumes of financing of the medium-term priorities were observed in 2012 (UAH 153293,21 thousand with a share of 0,011 of GDP), the smallest in 2014 (UAH 97509,11 thousand with a share of 0,006% of GDP).

The dynamics of number of the medium-term priorities financed in 2012-2016 was uneven. Among the approved 53 medium-term priorities, they were most financed in 2014 (40 or 75,5%), the lowest – in 2013 (28 or 52,8%), while in 2014, activation of this process took place, which was supported in 2015 and 2016 [3].

Ten medium-term priorities during the entire period under study attracted more than 83,1% of the total volume of funds received, almost 63% of which were accounted for four directions of the agricultural profile. Top ten priorities include aircraft, shipbuilding, rocket and missile engineering, construction of energy efficient buildings and renewable energy, rational subsoil and land use and developing new materials.

It is advisable to carry out a more detailed analysis of financing of the medium-term priorities for each strategic direction separately.

According to the first strategic priority "Assimilation of new technologies for energy transportation, implementation of energy-efficient, resource-saving technologies, development of alternative energy sources", seven medium-term priorities were approved, five of which were financed in 2016 (in 2015 and in 2014 – six in each year, in 2013 – three, in 2012 – five priorities). In 2012-2016, the volume of financing of the medium-term priorities amounted to UAH 33933,64 thousand (56,7% of the financing volume of the strategic priority, UAH 10238,06 thousand of which or 50,9% of the financing of the strategic priority in 2016 and 94,4% compared to 2015 (UAH 10850,80 thousand) (Table 1). The dynamics of the financing volumes of the medium-term priorities in 2012-2016 shows their decline in 2012-2014, a sharp (3,5 times) growth in 2015 (the largest volumes of financing) and a slight decline in 2016.

Under the second strategic priority "Assimilation of new technologies of high-tech development of the transport system, rocket and space industry, aircraft and shipbuilding, armament and military equipment", seven medium-term priority directions of innovation activity of the general national level were approved, six of which were financed in 2016 (in 2015 – five, in 2014 – seven, in 2013 – three, in 2013 – five priorities). In 2012-2016, the volume of financing of the medium-term priorities amounted to UAH 63137,53 thousand (81,3% of the volume of strategic priority financing for this period, UAH 5406,40 thousand of which or 86,2% of the volume of corresponding financing of the strategic priority in 2016 and 122,2 compared to 2015. The dynamics of financing the medium-term priorities in 2012-2016 is unstable and shows a sharp decline in 2013 (almost 9 times) compared to 2012, then a significant increase (more than 4 times) in 2014 compared to 2013, a threefold reduction in 2015 compared to 2014 and an increase in 2016 by 22,2% compared to 2015. The largest volumes of financing (UAH 36491 thousand or 57,7% in 2012) were thanks to the purchase of Hyundai trains.

Under the third strategic priority "Assimilation of new technologies for production of materials, their processing and combination, creation of the industry of nanomaterials and nanotechnologies", eight medium-term priority directions of innovation activity of the national level were approved, all of which were financed in 2016 (in 2015 and 2014 – also all eight, in 2013 – six, in 2012 – seven priorities). In 2012-2016,

Table 1

Condition of financing of the strategic priorities in 2012-2016

Strategic priority	Number of the medium-term priorities, total	Number of the medium-term priorities that were funded in 2016	Volume of financing in 2012-2016, ths. UAH	Share of the volume of financing of the strategic priority,%
1. "Assimilation of new technologies for energy transportation, implementation of energy-efficient, resource-saving technologies, development of alternative energy sources"	7	5	33933,64	56,7
2. "Assimilation of new technologies of high-tech development of the transport system, rocket and space industry, aircraft and shipbuilding, armament and military equipment"	7	6	63137,53	81,3
3. "Assimilation of new technologies for production of materials, their processing and combination, creation of the industry of nanomaterials and nanotechnologies"	8	8	45391,55	75,7
4. "Technological renewal and development of the agro-industrial complex"	8	8	432573,49	95,6
5. "Implementation of new technologies and equipment for high-quality medical care, treatment, pharmaceuticals"	10	3	5222,86	8,3
6. "Wide application of technologies of cleaner production technologies and environmental protection"	5	4	44741,88	52,8
7. "Development of modern information and communication technologies, robotics"	8	4	13069,59	32,5

Source: compiled based on the data of the State Statistics Service of Ukraine [3]

the volume of financing of the medium-term priorities amounted to UAH 45391,55 thousand (75,7% of the volume of financing of the strategic priority during this period), UAH 12129,41 thousand of which or 74,2% of the financing volume of the strategic priority in 2016 and 104,8% compared to 2015. Generally, the dynamics of financing of the medium-term financing is positive (except for a slight decrease in 2013) with the largest volumes in 2016.

Under the fourth strategic priority "Technological renewal and development of the agro-industrial complex", eight medium-term priorities were approved, all of which were financed in 2016, as well as for the entire period of 2012–2016. In 2012-2016, the total volume of financing of medium-term priorities amounted to UAH 432573,49 thousand (95,6% of the financing volume of the strategic priority over this period and 67.8% of the total financing of the medium-term priorities – the largest share), UAH 111598,80 thousand of which in 2016, what is 96,6% of the financing volume of the strategic priority and 124,2% compared to 2015. The dynamics of financing of the medium-term priorities indicates a significant reduction in their financing in the period 2012-2014 and a double increase in 2016 compared to 2014.

Under the fifth strategic priority "Implementation of new technologies and equipment for high-quality medical care, treatment, pharmaceuticals", ten medium-term priorities were approved, three of which were financed in 2016 (in 2015 – two, in 2014 – one, in 2013 and 2012 – none). During the whole period of 2012-2016, four priorities were financed, while in 2012 and 2013 financing of innovation activities within the strategic priority was carried out beyond the approved medium-term priorities. In 2012-2016, financing of the medium-term priorities amounted to UAH 5222,86 thousand (8,3% of the financing volume of the strategic priority during this period and 0,8% of the total financing of the medium-term priorities – the smallest share), UAH 2876,80 thousand of which or 55,1% in 2016 and 136,6% compared to 2015. The dynamics of the financing volumes of the medium-term priorities in 2014-2016 is positive, with a significant (almost 9-fold) increase in 2015 compared to 2014.

Under the sixth strategic priority "Wide application of technologies of cleaner production technologies and environmental protection", five medium-term priorities were approved, four of which were financed in 2016 (all five priorities in 2012-2015). In 2012-2016, the financing volume of the of medium-term priorities amounted to UAH 44741,88 thousand (52,8% of the financing volume of the strategic priority during this period), UAH 5884,19 thousand of which or 13,2% in 2016 and 33,1% compared to 2015. The dynamics of financing of the medium-term priorities in 2012-2016 shows an annual increase in 2012-2015, with a significant (3,8 times) in 2014 compared to

2013 and a sharp decrease (almost 3 times) in 2016 compared to 2015.

Under the seventh strategic priority "Development of modern information and communication technologies, robotics", eight medium-term priorities were approved, four of which were funded in 2016 (in 2015 and 2014 – five in each year, three in 2013, five priorities in 2012). In 2012-2016, the financing volume of the medium-term priorities amounted to UAH 13069,59 thousand (32,5% of the financing volume of the strategic priority), UAH 1609,09 thousand of which or 12,3% in 2016 and 71,9 compared to 2015. The dynamics of the medium-term priorities in 2012-2016 is unstable and shows the highest volumes in 2012 (UAH 6546,8 thousand or 50,1%) and the smallest (UAH 928,99 thousand or UAH 7,1%) in 2013.

Thus, all medium-term priorities were financed annually only under the strategic direction "Technological renewal and development of the agro-industrial complex" in the period of 2012-2016, to which the largest share of funds was directed (67,8%). 7 medium-term priorities were not financed at all, 6 of which under the strategic direction "Implementation of new technologies and equipment for high-quality medical care, treatment, pharmaceuticals" (the smallest share of funds amounted to 0,8%) and one according to the strategic direction "Development of modern information and communication technologies, robotics", which indicates the loss of their relevance.

Introduction of an effective institutional model for financing scientific and technical programs, innovation projects, research and development works at the expense of the state budget, technology transfer projects remain an urgent issue.

In 2012-2016, the transfer of technologies created owing to the budget funds under the strategic priority directions of innovation activity was made on a contractual basis by purchasing them (36 units) only on the domestic market under the 1st, 3rd, 4th, 7th priorities and delivery (5671 units) by all priorities on the domestic and foreign markets.

Transfer of technologies was carried out most actively under the priority "Technological renewal and development of the agro-industrial complex", according to which the most (4980 or 87,8%) technologies were delivered and the largest amounts of funds were received (UAH 152302,87 thousand or 73,3%), at the same time, the average cost of the delivered technologies in this area was the lowest, while the highest was under the priority 5 "Implementation of new technologies and equipment for high-quality medical care, treatment, pharmaceuticals".

In the domestic market, the vast majority of technologies (97,2%) was purchased in the form of an agreement on "exclusive proprietary rights to inventions, industrial designs, utility models", delivered technologies were drawn up under a agreement type "concerning licenses, licensing agreements for use of inventions, industrial designs, useful models" (74,6%). In the foreign market, the largest share (72,3% of delivered on the market) technologies is transferred under an agreement type, "know-how, agreements on acquisition (transfer) of technologies". Significant activation of technology transfer took place in 2014-2016, which indicates the need for new technologies in the Ukrainian economy.

Conclusions and directions for future research. A significant problem of financial provision is the restriction of the rights of higher educational and scientific institutions to the use of funds received by them from enterprises, grants from international organizations, which, together with delays in payments, leads to the suspension of the activities of the budgetary sector institutions for the introduction of innovations, the refusal of enterprises, foreign organizations to enter into contracts with budgetary institutions, reduction of financing, inability of participation of higher educational and scientific institutions in the EU scientific program "Horizon 2020".

It is important to implement the Resolution of the Verkhovna Rada of Ukraine "On the recommendations of the parliamentary hearings on the subject of "On the Condition and Legislative Provision of the Development of the Science and the Scientific and Technical Sphere of the State" dated February 11, 2015 [6].

As to improvement of financing of scientific and technical and innovation activity in Ukraine, significant and promising are:

– amending the Budget Code of Ukraine regarding the possibilities for budget institutions to receive dividends from the activities of scientific parks, business entities created for the use of objects of intellectual property rights, the rights for which belong to institutions;

– removing constraints on the use of funds by scientific and higher educational institutions, which they receive from joint research work with enterprises and in the form of grants received from international and foreign organizations;

– introduction of an effective mechanism for placement of own revenues from fees for services from scientific and scientific and technical activities in banking institutions received by higher educational and scientific institutions;

– making amendments to the Law of Ukraine "On Innovation Activity", which introduce mechanisms for realization of priority directions of innovation activity, defined by the Law of Ukraine "On Priorities of Innovation Activity in Ukraine", as well as strengthening the role of the Law of Ukraine "On General State Complex Program of High Knowledge Intensive Technologies" on realization of the specified priority directions.

REFERENCES:

1. Pro innovatsiinu diialnist [On innovative activity]: Law of Ukraine dated July 04, 2002, No. 40-IV. Retrieved from: http://zakon2.rada.gov.ua/laws/show/40-15 (access date: August 02, 2018).

2. Natsionalna innovatsiina systema: stan ta zakonodavche zabezpechennia rozvytku: rekomendatsii parlamentskykh slukhan [National innovation system: condition and legislative provision of the development: Recommendations for the parliamentary hearings] (March 21, 2018). Retrieved from: http://ua-ekonomist.com/archive/2018/3/rekom.pdf (access date: July 26, 2018).

3. Ofitsiinyi sait Derzhavnoi sluzhby statystyky Ukrainy [Official site of the State Statistics Service of Ukraine]. Retrieved from: http://www.ukrstat.gov.ua (access date: June 05, 2018).

4. Pro priorytetni napriamy innovatsiinoi diialnosti v Ukraini [On priorities of innovation activity in Ukraine]: Law of Ukraine dated September 08, 2011, No. 3715-VI. Retrieved from: http://zakon5.rada.gov.ua/laws/show/3715-17 (access date: August 04, 2018).

5. Deiaki pytannia vyznachennia serednostrokovykh priorytetnykh napriamiv innovatsiinoi diialnosti zahalnoderzhavnoho rivnia na 2012-2016 roky [Some issues of definition of medium-term priorities of innovation activity at the national level in 2012-2016]: Resolution of the Cabinet of Ministers of Ukraine No. 294 dated March 12, 2012. Retrieved from: http://zakon5.rada.gov.ua/laws/show/294-2012-п (access date August 15, 2018).

6. Pro Rekomendatsii parlamentskykh slukhan na temu: “Pro stan ta zakonodavche zabezpechennia rozvytku nauky ta naukovo-tekhnichnoi sfery derzhavy” [On the recommendations of the parliamentary hearings on the subject of “On the condition and legislative provision of the development of the science and the scientific and technical sphere of the state]: Resolution of the Cabinet of Ministers of Ukraine No. 182-VIII dated February 11, 2015. Retrieved from: http://zakon3.rada.gov.ua/laws/show/182-19 (access date June 12, 2018).