It has been established that in Ukraine during the transformational period the state performs three main tasks in the field of state regulation of science: preservation of the scientific potential and elements of the organization of science, the formation of new scientific organizations, and the restructuring of elements of the scientific complex. The organization of the system of state regulation of science in Ukraine has signs of a departmental nature, mechanisms for coordination and consultation with all interested subjects of scientific and scientific-technical activity are little developed. Science is not yet considered as an essential element of the national innovation system, but based on the above information, the conclusion about the revitalization and continuous development of science in the state, as an independent and important component in a difficult period, should be directed to the development and formation of new scientific directions.

Keywords: *state regulation, scientific activity, transformational period, educational systems.*

UDC 351.82

Viktor Paliukh,
National University of Civil Protection of Ukraine, Kharkiv

Some features of state regulation of scientific activity in Ukraine

The essential characteristics of science in the national innovation system are largely determined by the basic properties of the economic and political systems in which it is formed. This explains the difference between the Soviet model of science in the command-administrative system and science in the market national innovation system.

In the administrative-command economy, science was characterized by: complete nationalization; closeness, low level of inclusion in the world scientific community, self-reliance; mobilization type of development; strong focus on solving tasks of ensuring defense capability; ideology imposing.

The goal of the development of science was set by political attitudes and was not based on the concepts of economic expediency. They consisted in supporting the military-industrial complex of the country, space exploration programs, as well as achieving self-sufficient technological support. The development of science for these areas was a priority, so funding was carried out on a large scale, it was quite costly for the country's economy. Science as a whole was considered to be "an immediate productive force" and "an engine of scientific and technological progress." In the conditions of the closed economy of the country, science was the source of its own technologies, since access to foreign high technologies was as limited as possible.

Under the conditions of complete nationalization and closeness of the scientific complex, communications with other economic spheres - the education system, the real sector - were weak, and there are practically no incentives for the commercialization of scientific results. In addition, there were no legitimate (officially included in the innovation process) small forms of innovation activity (small innovative enterprises).

Science was represented mainly by large and powerful research and development organizations, experimental and experimental production, subordinated to the relevant ministry or department. New knowledge gained as a result of basic research at research institutes was transferred in a planned manner to applied institutes, to factories, and then only to organizing the production of new products. Innovations were introduced into the economy that the central authorities considered effective for some reason or another. At the same time, economic entities constantly resisted such innovations. Due to the lack of private ownership of an intellectual product created by individual inventors, effective motivational levers associated with the desire of innovation owners to obtain significant economic advantages and development prospects were not used in the innovation process. That is why the problem of introducing innovations was fundamentally insoluble.

At the same time, the model described above had a number of unique advantages:

1) the possibility of concentrating vast intellectual and material resources to solve large-scale scientific and technical tasks necessary for the state;

2) favorable, from the point of view of the scientific community itself, economic and social conditions for the development of basic and exploratory research;

3) the ability to solve individual challenges at the expense of low cost resources.

In the late 1980s - early 1990s immanently inherent command-and-control model deficiencies began to emerge. Chief among them were:

• over-centralized management, lack of mobility and system flexibility, low efficiency of resource use;

• the lack of a real connection between public needs and the priorities of science and technology policy due to the closed and non-transparent system;

• the absence of important elements of the national innovation system concerning the commercialization of research and development results.

The state had no economic interest in effective science policy. Relations between the state and science were built on a hierarchical principle, and the state completely led the science.

The number of cadres of science declined not as fast as the amount of funding, testified not only about the inertia of this sphere, but also was an indicator of the economic crisis in the country and the inability of the economy to "absorb" the excess of people employed in science.

There were positive changes, laid the foundation for the future recovery of science. Gradually, new sectors of science began to appear - non-state and small innovative entrepreneurship. The ideological barriers disappeared, the openness and degree of inclusion of domestic science in the world has increased. Thus, a scientific innovation sphere of a transitional type began to form, combining elements of the old, administrative-command, and new, market-based economic systems.

The changes have set new tasks for the government to regulate science. The state has ceased to be the only consumer of the results of science, so it became necessary to stimulate demand for research results from other economic agents, develop links between science and the real economy, restructure the public sector of science proper, the size and composition of which no longer corresponded to the new economic realities. In addition, the state, as a participant in market relations, is interested in its own efficiency, and therefore it has become necessary to revise the methods and

mechanisms of state financing of science. Thus, during the transition period, the state's functions of regulating the teachings were not reduced (despite the processes of denationalization and liberalization), but increased and complicated.

In connection with the economic crisis, I also touched the scientific complex; the state, along with the formation of market-based regulatory mechanisms and the creation of new institutional structures, had two more tasks:

• preservation of viable and strategically important elements of the scientific complex;

• restructuring (modification) of the elements of the national innovation system that have been developed to adapt to the changed;

Reducing the time out of the crisis, to promote economic development can be achieved through the adaptation of successful international experience. Ukraine has made repeated attempts to adapt foreign experience, especially in the area of creating conditions for the commercialization of scientific results. At the same time, there was a problem of its effective borrowing, as well as ensuring a balance between borrowing and the creation of its own structures, the formation of institutions.

The natural development of institutions assumes that one institution acts as the heir of another, an environment adequate to a particular institution is formed, and in it are generally accepted practices. When adding (transferring without adaptation) institutions, the environment, as a rule, does not accept it, changes it, and only then adapts it to its needs. Given this, it is inappropriate to isolated transfer of institutions without taking into account the links that exist between this institution and the environment where it is transferred from. Therefore, when borrowing foreign experience, not only the economic situation in countries where a particular instrument has successfully established itself is important, but also the size of the country, the scale of its scientific potential and even its national traditions (through the latter factor, the experience of Japan and China is difficult to borrow).

In Ukraine, there are three main tasks of the state in relation to science - preserving the best, reforming, building a new one - were solved differently during the period of economic reforms. The

evolution of directions and methods of government regulation can be traced by analyzing changes in the regulatory framework and comparing them with plans (reflected in government conceptual documents) for the development of science and the formation of an innovation system.

In accordance with the main tasks of the state in relation to science, legal documents can be divided into three categories. The first group combines regulatory legal acts aimed at solving the problem of preserving the scientific potential of Ukraine (including wage increases for certain categories of workers, preferential taxation of scientific organizations), forms of organization of science, and its budget financing. The second group includes documents whose purpose is to create a new institutional environment, new mechanisms and organizations for science and innovation. Examples are the decrees of the President of Ukraine on the creation of state scientific foundations, on extrabudgetary funds of scientific research. The third group includes documents defining the procedure and directions for restructuring, reforming the existing elements of the national innovation system (privatization of objects of the scientific and technical sphere, changing the charters of scientific foundations, and abolishing the accreditation of scientific organizations).

Based on what goals and approaches prevailed at one time or another, which the state had financial resources and to what extent the policy was consistent, we can suggest the following periodization of the state science and technology policy in Ukraine.

The main stage of the transformation of science in general began in 2002 and continues to this day. It is characterized as a period of active preparation of conceptual documents designed to determine strategic, long-term scientific and innovative policies and integrate them into other economic initiatives of the state, including industrial policy. During this period, the notion of a national innovation system expanded somewhat, although the importance of building the system itself is still seen in a narrow sense - as a system that ensures the practical realization of the results of scientific activity.

The current stage is characterized by the beginning of the system restructuring of the scientific and technological complex. The budget of science has been increased with a smaller number due to a reduction in the number of people employed in the scientific complex of the country and has

allowed the launch of a number of long-term and resource-intensive projects (large innovative projects, free economic zones). The state began to promote the formation of links between the subjects of the innovation system by creating various elements of infrastructure, as well as supporting small science-intensive firms.

In previous periods, resource support for legislative initiatives was insufficient, and initiatives laid down in regulatory documents were not always fully implemented. In addition, there were constant reviews or cancellations of previously adopted legislative acts and decisions.

A characteristic feature of the third period was that the government began to consider science comprehensively, given the importance of the connection between science and education, namely: 1) as a sphere of production of new knowledge; 2) as a factor of economic growth, contributes to the development of the innovation system. To support science as a sphere of knowledge production, decisions were taken to assist the state in basic research, improve the budget process, and optimize the organizational structure of the public sector of science. In order to increase the economic return from scientific activities, measures were developed aimed at creating favorable conditions for the commercialization of scientific results and the development of links between science and organizations of the private sector (industry).

There have been changes in the strategic objectives of the state science policy. The intentions of the government to transform and develop the scientific and technological complex were particularly large-scale, systemic and deeper than the practical steps taken. An analysis of the evolutionary development of the concepts of reforming science, given below, indicates the gradual introduction of a systematic approach to the implementation of science and technology policy and attempts to link it with the general economic policy of the state.

Conceptual documents in which the main directions of future changes are formulated and the mechanisms for their implementation, as a rule, are drawn up as concepts, strategies or bases. In a historical retrospective, conceptual documents are an important source of concentrated information on the dynamics of changes occurring in Russian science.

At present, the scientific and technical sphere has gradually become regarded as part of the overall economic system of the country, and the fact of the appearance in the conceptual documents of the task of increasing the competitiveness of products and enrolling it in a number of priority indicates.

There are a number of functions that have been drawn at the state level relatively recently. Thus, the need to monitor the implementation of state initiatives was announced back in 2005. At the same time, the need to monitor the activities being implemented was emphasized.

On the peculiarities of the organization of state regulation of science in Ukraine. The organizational structure of the regulation of science and innovation at the state level can be attributed to a centralized, traditionally departmental type with a low level of coordination of interagency interactions. Such an organization of management is inherited from the Soviet system. Only relatively recently, changes have begun to ensure its flexibility, to form structures that allow including in the process of developing a strategic vision not only representatives of executive bodies, but also other participants of the national innovation system (first of all - representatives of business structures).

The central executive body in this area is the Ministry of Education and Science of Ukraine. The Ministry of Education and Science of Ukraine submits to the Cabinet of Ministers of Ukraine.

In accordance with the tasks entrusted to him, the central executive authority in the field of science is developing the foundations of the scientific and technical development of Ukraine; ensures the development of scientific and technological potential of Ukraine; organizes and coordinates innovation activities; ensures the development of the national system of scientific and technical information, coordinates the activities of the executive authorities in the development of national scientific and technical programs, and monitors their implementation; manages the system of scientific and technical expertise: ensures the integration of domestic science into the world scientific space while preserving and protecting national priorities.

Other central executive bodies manage scientific and innovative activities in the relevant industry; determine the direction of its development; direct and control the activities of scientific

organizations subordinate to them; organize the production of modern competitive products; responsible for the level of scientific and technological development of relevant industries. For example, the Ministry of Internal Affairs of Ukraine is the governing body of the State Research Institute. This institute was established by the Ministry of Internal Affairs of Ukraine and is subject to it.

Local executive authorities and local governments in accordance with their competence ensure the implementation of state scientific and research programs; develop and organize the implementation of regional (territorial) programs.

In accordance with Art. 22 of the Law of Ukraine "On Local State Administrations", local state administration:

1) implements the state policy in the field of science, education, health care, culture, physical education and sports, motherhood and childhood, family and youth;

2) contributes to the development of science and technology, the implementation of regional scientific and technical programs, the introduction of new environmentally friendly technologies, the improvement of the technical level of production and product quality, the solution of scientific and technical problems of paramount importance for increasing its efficiency and competitiveness; ensures the protection of the rights of inventors and rationalizers, the creation of territorial innovation centers and tech parks.

A specific place in the system of bodies functioning in the field of science, belongs to the Higher Attestation Commission of Ukraine, which is the central executive body, the status of which is equal to the state committee of Ukraine. The Higher Attestation Commission of Ukraine implements the state policy in the field of certification of scientific and scientific-technical personnel of higher qualification, awarding scientific degrees and awarding the academic title of senior research assistant, supervises the activities of specialized academic councils and the quality of certification of scientific and scientific-pedagogical personnel of higher qualification.

The Higher Attestation Commission of Ukraine creates specialized dissertation defense councils, approves their personal composition and the list of specialties for which these councils are

granted the right to defend dissertations, conducts their periodic certification; develops and approves the requirements for dissertations and persons applying for the degree and title of a senior researcher; approves decisions of specialized scientific councils on awarding a scientific degree of a doctor of science; decides on the issuance of a diploma of the candidate of sciences on the basis of the decision of the dissertation council on awarding a scientific degree, on issuing a certificate of senior research fellow on the basis of the decision of the academic council on awarding the academic title of research scientist.

The Higher Attestation Commission of Ukraine is authorized to annul decisions of specialized councils and academic councils on awarding academic degrees and awarding the academic title; deprive them of the right of admission to the defense of the dissertation; deprive scientific and scientific-pedagogical staff members of scientific degrees and the academic title of senior research assistant. On issues of certification of scientific and scientific-pedagogical personnel of higher qualification, the Higher Attestation Commission of Ukraine publishes an information bulletin.

In order to promote the formation of the state policy of science development, determine the priority scientific and technical directions, work out a strategy for technological development, improve the structure of science management and the system of training and certification of scientific personnel under the President of Ukraine on the implementation of a consultative and advisory body - the Council for Science and Scientific and Technical Policy. The main tasks of this body are the development of state policy on the development of science and technology, the legal and organizational support for their implementation; forecasting the development of science and technology; consideration and evaluation of projects of national and state-scientific programs, identification of priority areas for the development of science and technology, etc.

Scientific research in universities - university science - is organized in order to: use the scientific and technical potential of higher education to determine the priority areas of basic research, strengthening the influence of science on the solution of educational and educational tasks; research and development of theoretical and methodological foundations of the development of science. The

executors of the research work are the faculty, students, doctoral students, graduate students, interns, scientists.

One of the forms of organization of science are national scientific centers. The status of a national scientific center can be granted to a scientific institution, a university of IV level of accreditation (association of scientific institutions or higher educational institutions of IV level of accreditation), which conduct comprehensive scientific research of national importance and have world-wide recognition of their activities. The status is granted by the Decree of the President of Ukraine at the proposal of the Cabinet of Ministers of Ukraine. National scientific centers carry out their activities in accordance with the Regulations on the National Scientific Center, which is approved by the Cabinet of Ministers of Ukraine.

In order to ensure the scientific substantiation of the structure and content of the priority directions of development of science and technology, scientific, scientific and technical, socio-economic, environmental programs and projects, determining the directions of scientific and technical activities, analysis and evaluation of the effectiveness of the use of scientific and technical potential, the research results are provided conducting scientific and technical expertise. Legal, organizational and financial bases of expert activity in the scientific and technical sphere are defined by the Law of Ukraine "On Scientific and Scientific and Technical Expertise".

For the modern system of science management bodies, we need, in our opinion, the creation of a certain coordinating body that would coordinate the state policy in the field of science is carried out by the central executive authorities.

In this regard, we propose the creation of an interdepartmental commission for science and innovation policy under the Cabinet of Ministers of Ukraine. The Commission should become a coordinating body that would ensure the interaction of interested executive bodies in order to develop and implement state policy in the field of scientific, scientific, technical and innovation activities, development of science and high technology centers, and public research institutions.

This Commission will be headed by the Minister of Education and Science, and its members should include representatives of the National Academy of Sciences of Ukraine, branch academies

of sciences, executive authorities, research institutions, and leading institutions of higher education. The Commission should deal mainly with the issues of science policy and the related areas of innovative development (the formation of the infrastructure for commercializing the results of scientific and technical activities).

So in 2016, the Cabinet of Ministers of Ukraine adopted a decree approving the procedure for preparing applicants for higher education to the degree of Ph.D. and Doctor of Science in higher education institutions (scientific institutions). According to this decree, the mechanism for preparing candidates for higher education at the third (educational and scientific) and scientific levels of higher education is determined in order to obtain a higher education degree of a Ph.D. and Doctor of Science, respectively. The forms of preparation of the PhD have not changed fundamentally; it is carried out in postgraduate studies, both full-time and part-time, as well as outside postgraduate studies, if only the applicant professionally implements scientific activities at the place of work. Only the terms for teaching, writing and protection of scientific work have increased, the term is four years allocated for the implementation of the curriculum and the protection of scientific work. At the same time, an experiment has been conducted in Ukraine since 2019 to award PhDs to applicants. The government approved the procedure for conducting an experiment to award the degree of Ph.D., the mechanism of which is significantly different from the previous one. From now on, it is stipulated that a specialized academic council is formed by the Ministry of Education and Science consisting of a chairman and four council members - two of whom are reviewers and two more are opponents, with the right to take on a person's dissertation and receive a Ph.D. her specified degree. Such an experiment will last until December 31, 2020. It will be possible to speak about its effectiveness after its testing in practice. This greatly simplifies the work of the academic council, and at the same time the work is complicated by the constant formation of scientific councils, the creation of which requires the fulfillment of additional conditions. Which complicate the process of defending a thesis by the applicant, and put forward additional conditions that are not mandatory according to the previously valid right defenses. Thus, the experimental project on the one hand simplifies the acquisition of a scientific degree, and on the other complicates considerably. The final

conclusions can be made after the expiration of the experimental period for the protection of applicants in practice.

References

1. Yadranska O.V. (2009) State regulation of science in Ukraine, Zaporizhia, Ukraine
2. The Cabinet of Ministers has approved the Ukraine 06.03.19 №167 About holding an experiment on the awarding of the degree of Ph.D. https://www.kmu.gov.ua/ua/npas/pro-mentu-z-prisudzhennya-stupenya-doktora-filosofiyi
3. The Cabinet of Ministers has approved the Ukraine 23.03.16 №261 On approval of the Procedure for the preparation of applicants for higher education with the degree of Ph.D. and Doctor of Science in higher education institutions (scientific institutions) https://zakon3.rada.gov.ua/laws/show/261-2016-%D0%BF