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DEVELOPMENT AND FUNDING OF SCIENTIFIC AND TECHNICAL ACTIVITY IN UKRAINE

The transformation processes in Ukraine at this stage are aimed at overcoming the decline in production, improving living standards and stimulating the economic processes. That is why the choice of intense direction of economic development is not possible without stimulating scientific and technical activity. The priority of economic development is investment in human capital and intellectual capital formation. Ukraine faces the task of forming its own innovation model, which involves the interaction of government, business and science. The state, first of all, must ensure the development of this model by creating the legal framework conditions for the effective operation of scientific and educational spheres and determine the priorities of innovation development.

Solving this urgent problem by domestic science poses new challenges as creating competitive technologies and implementation the results of scientific and technological activity in production.

However, this task is hampered by insufficient amount of budget to funding the research and development, the limited budgetary sources, enterprises low demand on research results and their ability to allocate capital for innovative development.

A large number of papers and publications has recently devoted to problems of financial support of innovation processes. Among them are the papers of V. Aleksandrovoi, V. Heitsia, V. Zymovtsia, M. Krupky, O. Lapko, O. Orliuk, S. Onyshko.

A significant part of investigations is concentrated on the analysis of

providing financial resources the innovative development, a lot of them are devoted to the issues of budget financing of research and development. In addition, a common feature of many publications is the consideration the credit resources as one of the sources of capital for innovation, while providing innovative processes by credit sources has wider meaning.

Scientific and technical activity is an activity aimed at obtaining and using new knowledge to solve technology, engineering, economic, social and other issues, and the functioning of science, technology and manufacturing as an unified system. It includes the entire process of creating innovative products – from the idea to its implementation in the production or sale. The main scientific, technical and technological potential remained in the base areas, but it is not used in full. There are problems of technological backwardness of Ukraine, lack of public and private sector funding for scientific and technical activity, lack of well-developed motivational factors of scientific and technological potential [1; 2].

According to the results of investigation scientific and technical sphere in Ukraine is characterized by the following trends (table 1, table 2) [3].

Table 1

The dynamics of completed scientific and technical works in Ukraine

Period	The amount of scientific and technical activities at current prices, %	Fundamental research, %	Applied research, %	Developments, %	Scientific and technical services, %
2001/2000	14,99	32,52	-30,18	19,06	77,49
2002/2001	9,75	20,27	12,69	5,27	14,05
2003/2002	32,96	15,60	25,09	37,04	45,92
2004/2003	23,87	28,20	33,48	16,51	39,39
2005/2004	17,17	43,26	23,57	8,71	15,21
2006/2005	11,12	26,48	18,71	13,91	-21,26
2007/2006	25,14	31,81	34,59	20,48	20,70
2008/2007	27,43	28,15	36,47	23,77	28,48
2009/2008	1,34	-0,56	-8,65	3,12	13,45
2010/2009	14,02	14,18	14,53	19,48	-7,63
2011/2010	4,89	0,80	15,44	-1,01	26,05
2012/2011	8,72	18,86	10,23	7,70	-6,84
2013/2012	4,70	2,81	1,46	7,50	1,82
2014/2013	-7,05	-8,17	-8,51	-7,47	-0,11
2015/2014	15,16	-0,39	18,90	22,12	10,40

The amount of scientific and technical activities at current prices according to the table. 1 from 2000 to 2015 increased in 2000-2015, except the 2014 because of the unfavorable political and economic conditions and military events. Dynamics of fundamental research is oscillatory in nature and in recent years had a negative direction. Number of applied research was changing more unstably, but its growth was outstripping the growth of Fundamental research. Demand on developments in recent years also increased. The amount of Scientific and technical services since 2010 decreased, and the positive trend showed up only in 2015.

In total change in all indicators is unstable. It is confirmed by the coefficient of variation which was ranging from 45% to 59%. All these speak about a high and a very high level of volatility (the amount of scientific and technical activities at current prices – 52%; fundamental research – 59%; applied research – 58%; developments – 49%; scientific and technical services – 45%). But still characterize positively the development of scientific and technical sphere in Ukraine except of 2014 in connection with mentioned events.

Despite the fact that the scientific and technical activities increased, the share of completed scientific and technical activities in GDP decreased from 0,95% in 2010 to 0,64% in 2015, also has been reduced the number of organizations that perform research and development, the number of scientists (table 2).

The share of enterprises engaged in innovation changed chaotically and mainly decreased. Spending of enterprises on research and development increased except for 2001, 2007 and 2009. From 2010 the situation began to improve, which indicated the activity of enterprises in scientific and technical developments. Before 2006 the share of enterprises implemented innovations reduced, and from 2006 the company began to implement actively innovations in their work. However, the number of implemented new processes in recent years decreased.

The variation of these indicators also demonstrates the average level of volatility of scientific and technical sphere. Only the indicator of spending of

enterprises on research and development is very unpredictable and changes rapidly.

Table 2

The dynamics of scientific personnel and innovation in Ukraine

Period	The share of enterprises engaged in innovation, %	Spending of enterprises on research and development, %	Number of organizations that perform research and development, %	The number of scientists, %	The share of enterprises implemented innovations, %	Number of implemented new processes, %
2001/2000	-8,33	-35,61	-0,74	-6,15	-3,38	1,28
2002/2001	9,09	57,58	-0,14	-5,20	2,10	-19,63
2003/2002	-16,11	15,85	0,68	-2,43	-21,23	29,77
2004/2003	-9,27	42,31	1,21	1,68	-13,04	16,53
2005/2004	-13,14	37,50	0,33	-1,02	-18,00	4,69
2006/2005	-5,88	62,16	-3,84	-4,99	21,95	-36,67
2007/2006	26,79	-0,65	-3,31	-3,42	15,00	23,93
2008/2007	-8,45	26,07	-1,85	-2,77	-6,09	16,07
2009/2008	-1,54	-31,92	-2,76	-1,84	-0,93	14,94
2010/2009	7,81	17,68	-2,76	-3,07	7,48	7,92
2011/2010	17,39	8,38	-3,68	-5,13	11,30	22,86
2012/2011	7,41	10,78	-3,75	-3,46	6,25	-12,83
2013/2012	-3,45	36,96	-5,38	-5,09	0,00	-27,97
2014/2013	-4,17	7,09	-12,60	-10,85	-11,03	10,60
2015/2014	7,45	16,24	-2,10	-7,98	25,62	-30,18

There is the variation of mentioned indicators in 2000-2015: the share of enterprises engaged in innovation – 14%; spending of enterprises on research and development – 59%; number of organizations that perform research and development – 13%; the number of scientists – 16%; the share of enterprises implemented innovations – 16%; number of implemented new processes – 22%; the share of completed scientific and technical activities in GDP – 19%.

The effectiveness of scientific and technical activity in Ukraine depends primarily on its incentives and support at all levels [4]. Thus there are a significant role of direct state support scientific and technological development and insufficient use of state indirect methods of stimulating the expansion of ties between science and industry. Also, stimulating enterprises to involve their own funds in research and development is at improper level. The analysis of scientific

and technical activity financial and credit support indicates a small share of credit in the total of such funding. Condition of lending Ukraine's economy by the banking system as a whole is characterized by a lack of focus on the ensuring the long-term innovation processes [5].

Therefore, the main causes of the current state of scientific and technical activity are: reducing the number of scientific and technical organizations; aging of laboratory equipment; low demand for domestic scientific production; decreased interest in scientific institutions by the state and the private sector; outflow of scientific personnel abroad; aging of scientific personnel; reduction of qualified support staff in scientific and technical sphere.

Despite the general acceptance of the priority of scientific and technical processes for economic development in Ukraine, the current state of the financial providing proves its crisis, the failure to establish the necessary conditions for the implementation of the existing innovation potential.

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