Current Features Regional Development of Organizations of the Sphere of Engineering in Ukraine

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***Abstract*—Features of modern regional development of organizations of the sphere of engineering in Ukraine are considered. The hypothesis that according to the dynamics of the main indicators of activity of regional organizations of the sphere of engineering can be determined or refuted the presence of a trend for deindustrialization both of the national economy and individual regions, to determine the corresponding changes in the intensification of regional scientific and technological and innovation activity was justified. The analysis of the relevant indicators allowed to reveal a trend towards deindustrialization of the economy not only in relation to depressed regions, but also relatively progressives. There was a confirmation of the continuation of the laws of the concentration of factors of activity of organizations in the field of engineering in Kiev and other industrialized regions. The stochastic dynamics of the main structural indicators of the organizations of the sphere of engineering is revealed, which determines the differential influence of regional factors on regional organizations of the sphere of engineering, which increases the role of the regional bodies of state power in the activity of these organizations.**

***Index Terms* — Organization of Sphere of Engineering, Deindustrialization of Economy, Innovation and Investment Activity, Region, Project.**

I. Introduction

Engineering organizations located in the regions are directly involved in the implementation of innovation and investment projects. The quality of design decisions contained in the project-budget documentation determines the nature and quality of the projects concerned. Taking into account the close connection of innovation and investment activities with the development of organizations of the sphere of engineering, it will be possible to note the relevance of research on contemporary trends in their development. On the one hand, the relevant trends are the result of the impact of innovation and investment processes on the activities of the organizations under investigation, and on the other hand, changes in the their state will eventually become a factor in the impact on the scientific, technological and innovative development of the regions and the national economy as a whole in the future.

Taking into account the importance of innovative processes that are manifested in specific regional innovation and investment projects, in the development of the economy of the country and individual regions, as well as the close link between innovation and investment activities and the state of organizations of the sphere of engineering, one should highlight the relevance of the analysis of the current trends regional of development of the organizations under study.

The urgency of the research of modern trends of the regional development of the relevant organizations is due to their differentiated state in separate regions, as well as to the differentiated influence on them of various regional factors. Clarification of the essence of these processes will allow more qualitatively to form the infrastructure support of regional innovation processes.

II. Literature Review

A. The analysis of recent research

The analysis of recent research in the direction [1-8] allows us to determine the existence of significant developments in the topics of innovation and scientific and technical activities, as well as engineering services. Unfortunately, the issues of regional development of engineering organizations often go unnoticed by scholars.

The paper [2] noted that the activation of innovation activity in the regions is necessary through the creation of innovative infrastructure objects, which will create conditions for cooperation between universities, scientific organizations, enterprises of the financial and real sectors of the economy and public organizations.

In [9], the author has already carried out the study of the peculiarities of the regional development of organizations of the sphere of engineering for the period 2000-2007 in the Ukraine. Which resulted in the following discovered: resources and relevant organizations are concentrated in the regions of the location of customers of the relevant works, namely, in industrialized regions; the tendency of concentration of resources of these organizations in Kiev was revealed. Further events, for example, the economic crises of 2008-2009, the events of 2014, and the combination of new factors affecting the regional development of the researched organizations, necessitate the refinement of trends and causal relationships in their activities.

B. Identification of previously unsettled parts of the general problem.

In our study, we will focus on the hypothesis that according to the dynamics of the main indicators of the activities of regional engineering organizations, one can determine or refute the existence of a trend towards deindustrialization of both the national economy and individual regions, and to identify the relevant changes in the intensification of regional scientific and technological and innovation activities.

III. Objective

The aim of the work is to clarify the current trends in the regional development of organizations of the sphere of engineering.

IV. Results

Unfortunately, in the statistical collections distributed by the State Statistics Service of Ukraine, and on its website it is impossible to find information about organizations of the sphere of engineering. Therefore, our research is based on the analysis of results responses to personal queries in this service.

As the main indicators of the organizations of the sphere of engineering in Ukraine, we have identified the following: 1) the number of organizations; 2) the number of their employees; 3) the volume of sales in monetary terms. The dynamics of these indicators is shown below:

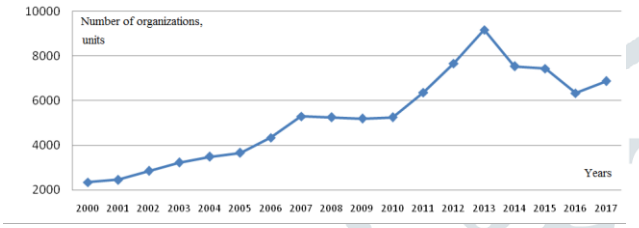

Fig. 1. Dynamics of the number of organizations of the sphere of engineering in Ukraine

Fig. 2. Dynamics of the number of employees of organizations on the sphere of engineering in Ukraine

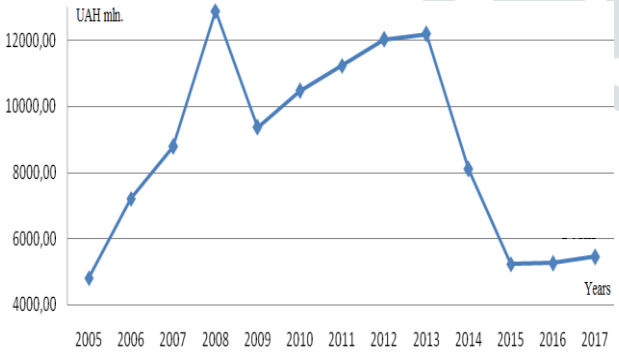

Fig. 3. Dynamics of volume of implementation of works of organizations of the sphere of engineering in Ukraine in 2005 prices, mln.UAH.

Consideration of the dynamics of the main indicators of activity of the organizations of the sphere of engineering in Ukraine allows to determine the impact on their activity of the financial and economic crisis of 2008-2009, as well as the events of 2014 in the East of Ukraine. In so doing, the latter had more harmful effects on their activities.

In comparison with economic crises, the consequences of which over time (2-5 years) are overtaken and smoothed, the negative manifestations of military conflicts for regional scientific and technical and innovation activities are considerably long-term and devastating.

On the whole, by 2013, the trend for development has been observed: the number of employees, the number of relevant organizations, the volume of implementation of works were increasing, and from 2014 the trend has changed to the opposite.

According to the aggregate dynamics of the indicated indicators one can consider the hypothesis about the presence of a trend for the de-industrialization of the national economy, but it should be borne in mind that after 2014, the State Statistics Service of Ukraine no longer collects and not publishes data for a number of regions: Crim, parts of Donetsk and Luhansk Oblasts. Thus, the decrease in the absolute values of the studied indicators can be explained precisely this, and in other regions the situation may be quite the opposite. Therefore, it is important to analyze the development of organizations on the sphere of engineering by separate regions.

We consider the number of employees of engineering organizations as the main factor in their activities. For a long period of time in Ukraine, the regularity of the concentration of such persons in Kyiv was observed:

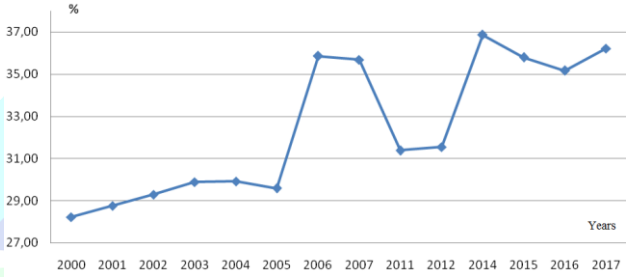

Fig. 4. Dynamics of the share of employees of the organizations of the sphere of engineering of Kiev,%

Kyiv was a clear leader in the following indicators: the number of organizations, the number of their employees, the volume of their work, indicating the concentration in this city of innovation and investment activities (Table 1). In other industrial regions and large cities (Dnipropetrovsk, Lviv, Kharkiv, Odesa oblasts), it is also possible to observe the concentration of resources of organizations in the sphere of engineering, but it is not possible to identify an explicit leader of the second level among them.

Although the share of the workers of the investigated organizations after Kiev the second place took town Kharkiv. At the same time, the dynamics of the corresponding specific weight tended to decrease, and in general, according to regions, the dynamics of the investigated indicator was unstable (Fig. 5).

TABLE I
THE AVERAGE STRUCTURE OF THE MAIN INDICATORS OF ORGANIZATIONS IN THE SPHERE OF ENGINEERING IN THE REGIONS OF UKRAINE DURING 2014-2017

Regions	The means of the structure by region,%		
	number of organizations	number of employees	volumes of work execution
Ukraine	100,00	100,00	100,00
Vinnytsia region	2,61	2,05	1,01
Volyn region	1,70	1,08	0,24
Dnipropetrovsk region	7,08	7,73	4,44
Donetsk region	3,28	4,05	5,48
Zhytomyr region	2,23	1,50	0,37
Transcarpathian region	2,05	1,02	0,27

Zaporozhye region	3,94	3,06	1,28
Ivano-Frankivsk region	2,98	1,69	2,63
Kiev region	6,07	2,85	4,27
Kirovograd region	1,20	0,84	0,27
Lugansk region	1,16	3,37	2,90
Lviv region	6,05	6,07	2,74
Mykolaiv region	2,36	1,82	1,09
Odessa region	5,57	4,49	4,19
Poltava regions	3,20	2,57	2,98
Rivne region	2,42	1,34	0,33
Sumy region	2,00	1,69	0,76
Ternopil region	1,52	0,99	0,29
Kharkiv region	7,05	10,14	6,53
Kherson region	1,36	1,03	0,29
Khmelnytsky region	2,37	1,37	0,47
Cherkasy region	2,39	1,59	0,55
Chernivtsi region	1,26	0,63	0,13
Chernihiv region	1,85	1,03	0,36
m. Kyiv	26,29	36,01	56,12

The data of the above table indicate a different structure of the studied indicators by region. The most uneven is the division of the scope of implementation and implementation of works.

The regions of the largest concentration of organizations on the sphere of engineering are relatively industrially developed. Since the main customers of the organizations of the sphere of engineering are industrial enterprises, entrepreneurs, various subjects of management of material and intangible fields of production, one can specify one of the peculiarities of the organizations of the sphere of engineering: concentration in densely populated of regions. These regions in Ukraine are leaders in terms of population size, as well as industrial development and investment in comparison with other areas of the country.

Engineering organizations directly participate in the implementation of innovation and investment of the projects. In addition, regional projects are implemented mainly with the participation of the regional relevant organizations. The concentration of their staff in a particular region indicates an intensification of innovation and investment activity in this area.

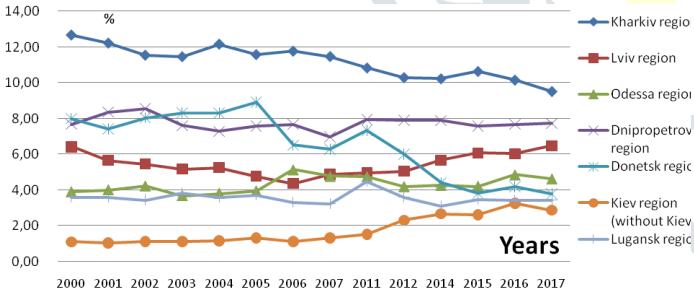

Fig. 5. Dynamics of the structure of the number of employees of organizations on the sphere of engineering by region Ukraine,%

According to Fig. 5 a slight increase of the researched indicator occurred in the Kyiv and Lviv regions.

It would seem that the growth of the proportion of the number of employees of the engineering organizations in such industrial regions as: Kyiv, Lviv and Kyiv regions - is evidence of the development of scientific and technological and innovation-investment activities in these regions, but the indicator of the structure is a relative indicator , which can grow even in the context of reducing the absolute, which is its base.

In any region of Ukraine after 2014 there was no increase in the number of employees of the investigated organizations, even in Kiev:

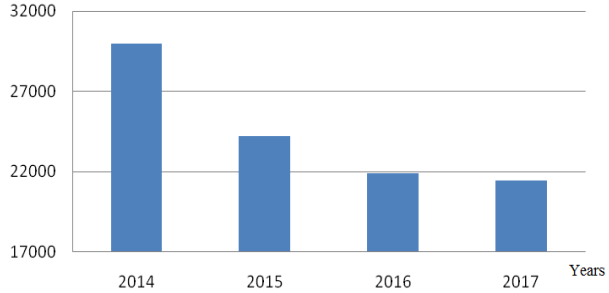

Fig. 6. Dynamics of the number of employees of organizations in the sphere of engineering in Kiev, persons.

The tendency to reduce the important factor of activity of organizations of the sphere of engineering after 2014 by all regions makes it possible to conclude that the hypothesis concerning the trend towards deindustrialization of the economy, unfortunately, has a confirmation not only relatively of depressed regions, but also relatively of progressives.

Particular attention should be paid to the volatility of the dynamics of structure of the studied indicators by regions (Fig. 7, Fig. 8).

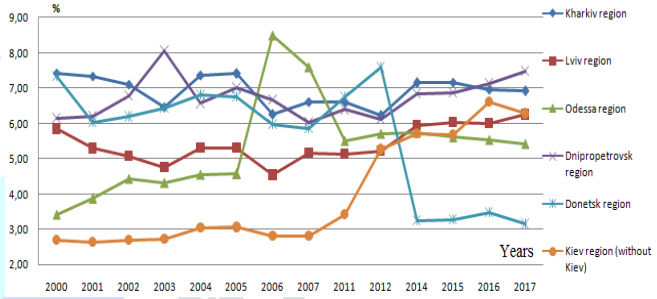

Fig.7. Dynamics of the structure of the number of organizations on the sphere of engineering by region Ukraine

In general, the dynamics of the structure of the number of investigated organizations was not stable, which indicates a high level of intensity of the processes of opening and closing organizations on the sphere of engineering in the regions. Therefore, the factors of influence and the nature of their influence on these organizations in each separate region of the country were different.

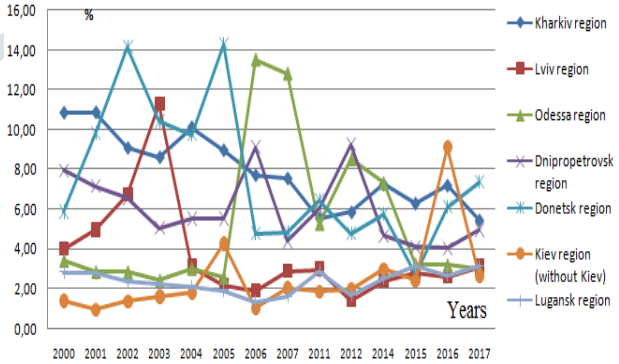

Fig.8. Dynamics of the structure of the volume of implementation of the work of organizations of the sphere of engineering by region Ukraine

The unstable dynamics of structural of the main indicators of the organizations of the sphere of engineering, which seems stochastic at first glance, allows us to formulate a hypothesis concerning the differential influence of regional factors on regional organizations of the sphere of engineering. It is this

fact that increases the role of regional authorities in the activities of the investigated organizations.

V. Conclusions

The hypothesis was proven that according to the dynamics of the main indicators of activity of regional organizations of the sphere of engineering can be determined or refuted the presence of a trend for deindustrialization both of the national economy and individual regions, and also to determine the corresponding changes in the intensification of regional scientific and technological and innovation activity.

The tendency towards reduction of the important factor of activity of organizations of sphere of engineering after 2014 in all regions of Ukraine is revealed, which allows us to conclude that the hypothesis about the trend for deindustrialization of the her economy has a confirmation not only relatively of depressed regions, but also relatively progressive.

The regularity of the concentration of factors of activity of organizations on the sphere of engineering in Kiev and other industrialized regions has been confirmed was confirmed.

It is specified that in comparison with economic crises, the consequences of which over time (2-5 years) are passing and smoothed out, negative manifestations of military conflicts for regional scientific and technical and innovation activity are considerably long-term and destructive.

Stochastic dynamics of the structure of the main indicators of the organizations of the sphere of engineering in the regions of Ukraine determines the differential influence of regional factors on these organizations, which increases the role of the regional bodies of state power in the activities of the investigated organizations.

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