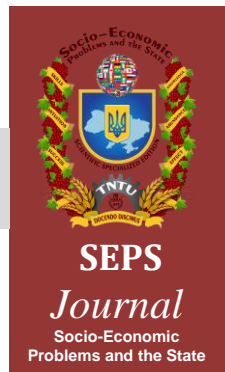




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INDICATORS OF ACTIVITY AND EFFICIENCY OF THE INDUSTRY OF LVIV REGION AND PODKARPACKIE VOIVODSHIP¹

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Abstract: *The implementation of a free trade area between Ukraine and the EU member states actualizes cross-border comparative assessments for identifying the competitive advantages of the industrial sector of national economy. Such assessment is correct for the industry of Lviv region and Podkarpackie Voivodship (Poland) as as regions, similar in many socio-economic characteristics.*

The goal of the article is to compare the competitive advantages of industry of Lviv region and Podkarpackie Voivodship to the system of indicators characterizing the efficiency and activity of industrial enterprises.

By integrating the set of primary indicators reflecting production, economic and resource efficiencies, as well as economic, industrial, technological, innovation, investment and export activity of industrial enterprises, corresponding indices, which together determine the competitiveness of the industrial sector, were calculated.

The analysis of the general integral index (average geometric value of the 7 indexes) revealed that the level of industry competitiveness in the Podkarpackie Voivodship was higher in all years of the analyzed period than in the Lviv region. This gap has become the biggest in 2015 (0.333 points), but in 2016 was reduced to a minimum (0.079 points). The latter indicates a tangible activation of industrial activity in the Lviv region. The largest growth in Lviv region was showed by indises of economic activity and investment activity. Instead completely unsatisfactory there is a profitability and innovation activity of industrial enterprises in Lviv region. As a result, many domestic producers are non-competitive on foreign markets today. To solve this problem, it is necessary on the one hand, to improve macroeconomic conditions for the operation of industrial enterprises in Ukraine towards promotion of domestic demand for domestic industrial products and of increase its supply, as well as towards improvement of quality management system for industrial production and acceleration of international certification of enterprises, and on the other - to increase the efficiency of investments and the level of implementation of the innovations into production.

Key words: *industry, activity, efficiency, integral indices.*

¹ The author's translation of articles. The editors of the Scientific Journal "Socio-Economic Problems and the State" are not responsible for the author's translation of articles.



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1. Formulation of the problem.

Industry is an important sector of the economy, which can potentially contribute to a significant increase in the gross domestic product (GDP) of the country, since it contains the links of high value-added manufacturing, the growth of which provides for the solution of a number of socio-economic issues.

The introduction of a free trade area between Ukraine and EU member states will update comparative assessments in order to identify the competitive advantages of the industrial sector of the national economy. Such an assessment is correct for the industry of Lviv region and Podkarpackie Voivodship as neighboring regions.

Podkarpackie Voivodship and Lviv region are border regions similar to many socio-economic indicators. At the same time, the province dominates the voivodship as an area - 4 thousand square meters. km or 22.3%, and by the number of population - by 406.3 thousand people or by 19.1 % (as of January 1, 2017). In the Podkarpackie Voivodship a special economic zone "Euro-Melets" and two industrial-industrial parks are active. Instead, there are formally two special economic zones in the Lviv region and work is underway to create four industrial-industrial parks. Voivodship industry is diversified and is divided into such clusters as Aviation Valley, Information Technology, Mining, Plastics Recycling, Welding Technologies, and Food Products. Three industrial clusters were created in the Lviv region: "Lifting equipment", "Woodworking and furniture production", "Production of alternative energy".

The industrial sectors of the Podkarpackie Voivodship and the Lviv region have similar characteristics, in particular:

- Well-developed extractive industry - in the voivodship, production of natural gas and crude oil (45% of the extraction of Poland) has been adjusted, while in the region, except for oil and gas, coal is being extracted and there is a prospect of shale gas extraction;
- among the types of processing industry the most developed food production and wood processing;
- high dependence on the customer's raw materials (machine building and light industry).

2. Analysis of recent research and publications.

The results of thorough research on theoretical and applied aspects of the management of productive resources are given in [1-6]. In particular, a comprehensive assessment of the impact of the FTA between Ukraine and EU member states on industrial activities was carried out by a group of scientists led by VM Academician NASU. Geitsa [1]. The study of the interconnection of technological investments and the technological structure of exports and realized industrial products, as well as a comparative assessment of labor productivity in Ukraine and the EU, Canada, USA and CIS countries, was carried out in [2]. Practical aspects of building the labor potential of industry are covered in [3]. The principles of state strategy and policy in the development of industry is considered in [4]. The current state and perspective directions of modernization of fixed capital in the Western region of Ukraine, based on the results of integrated assessment and economic-mathematical modeling of the cost of fixed capital of industrial enterprises, are illustrated in [5]. Trends in the impact of major socio-economic factors on labor productivity is considered in [6].

At the same time, in these and other studies, insufficient attention has been paid to transboundary comparisons, in particular in terms of the efficiency of industrial activities. The need for such information for the development and implementation of the latest industrial policy in Ukraine, aimed at increasing the competitiveness of domestic industry, updates the research in this direction.

3. Task formulation.

The goal of the article is to compare the functioning of the industry of Lviv region and Podkarpackie Voivodship by a system of indicators that characterize the level of efficiency and activity of the subjects of industrial activity.

4. Main material exposition.

The calculation of the values of the integral index of the competitive advantages of the industry in Lviv region and Podkarpackie Voivodship (Figure 1) showed a tendency to increase (except for 2014 and 2015) the overall level of development of the industrial sector of the oblast's economy. However, the overall level of competitive advantage of the industry of the Podkarpackie Voivodship over the analyzed peri

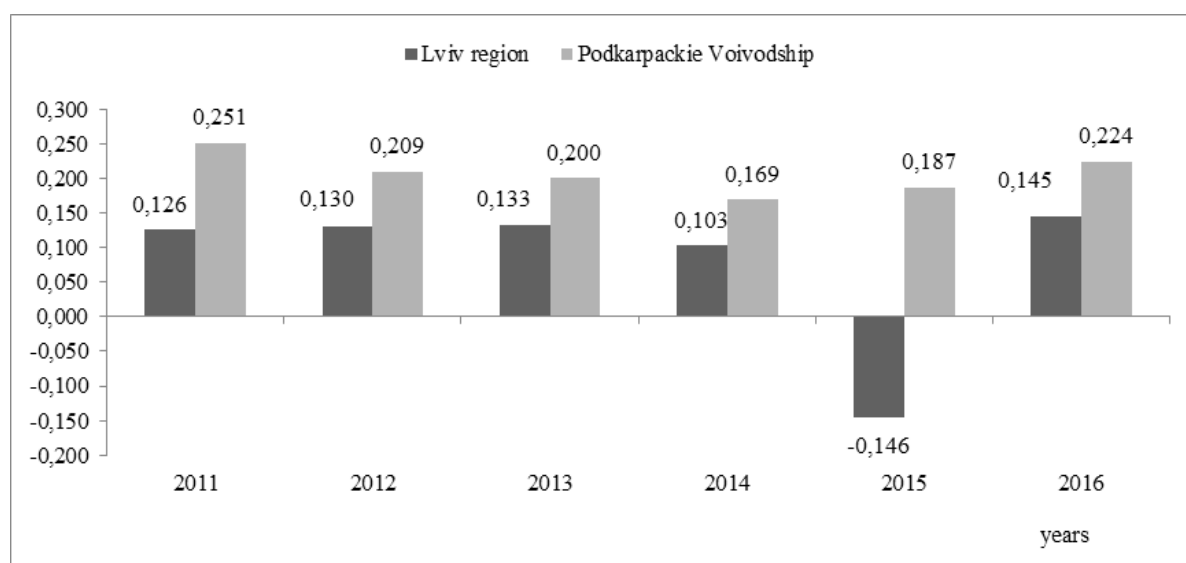


Figure 1. Integral Index of Industry Competitiveness Lviv region and Podkarpackie Voivodship

Author's calculations based on [7, 8]

Thus, in terms of economic efficiency, the Polish industry on the meso-level (as well as on the macro level) completely prevailed in Ukrainian (Table 1). In particular, the profitability of operating activity, turnover and assets in the Podkarpackie Voivodship during the analyzed period was higher than in the Lviv region, and in 2014-2016, this advantage increased further as a result of a negative financial result prior to the taxation of the industry's latter. Thus, in terms of economic efficiency, the Polish industry on the meso-level (as well as on the macro level) completely prevailed in Ukrainian (Table 1). In particular, the profitability of operating activity, turnover and assets in the Podkarpackie Voivodship during the analyzed period was higher than in the Lviv region, and in 2014-2016, this advantage increased further as a result of a negative financial result prior to the taxation of the industry's latter.

The resource efficiency of the Podkarpackie Voivodship industry was 3.37 times higher in 2011-2016. A key advantage of the Voivodship industry (like Poland as a whole) is the relatively high level of labor productivity (4.19 times higher than in Ukraine). At the same time, it should be noted that the average number of workers in the industry of Lviv region is 1.16 times higher than in the voivodeship.

Table 1. Indexes of the state and results of activity of industry of the Lviv region (L) and Podkarpackie Voivodship (P) (in the stakes of unit)

Показник	2011		2012		2013		2014		2015		2016	
	L	P	L	P	L	P	L	P	L	P	L	P
<i>Production activity</i>												
Sold production of industry growth rate	0,263	0,151	0,077	0,046	0,007	0,031	0,143	0,001	0,478	0,032	0,152	0,041
Share of industrial production in total output	0,265	0,283	0,264	0,29	0,264	0,293	0,264	0,31	0,326	0,325	0,329	0,33
Integral index	0,264	0,217	0,171	0,168	0,129	0,162	0,204	0,155	0,402	0,179	0,241	0,185
<i>Export activity</i>												
Share of industrial goods in the export of goods and services	0,857	0,721	0,824	0,715	0,731	0,672	0,702	0,621	0,665	0,612	0,676	0,608
Share of exports in the volume of industrial products sold	0,287	0,285	0,295	0,312	0,285	0,324	0,362	0,375	0,391	0,412	0,399	0,415
Integral index	0,572	0,503	0,56	0,514	0,508	0,498	0,532	0,498	0,528	0,512	0,538	0,512
<i>Investment activity</i>												
Growth rate of capital investment of industrial enterprises	0,207	0,191	0,11	0,055	0,319	0,001	-0,213	0,066	0,327	0,008	0,745	0,122
Growth rate of foreign direct investment in the industry	0,018	1,1	0,718	0,014	0,138	0,084	-0,283	0,224	-0,119	0,128	0,091	0,249
Share of industry in FDI total inflows	0,273	0,466	0,39	0,663	0,425	0,427	0,378	0,423	0,367	0,421	0,38	0,426
Integral index	0,166	0,586	0,406	0,244	0,294	0,171	0,039	0,088	0,192	0,095	0,345	0,184
<i>Capital activity</i>												
Growth of irreversible assets rate	0,082	0,241	0,215	0,144	0,193	0,037	0,072	0,173	0,074	0,058	0,097	0,021
Share of irreversible assets is in assets	0,487	0,67	0,513	0,64	0,537	0,66	0,481	0,66	0,447	0,65	0,374	0,651
Integral index	0,285	0,456	0,364	0,392	0,365	0,349	0,277	0,244	0,261	0,296	0,235	0,336
<i>Innovation activity</i>												
Share of innovation active enterprises in the total number of industrial enterprises	0,098	0,42	0,108	0,398	0,12	0,428	0,126	0,407	0,184	0,445	0,186	0,461
Share of innovative products sales in total sold production of industry	0,015	0,121	0,021	0,132	0,03	0,125	0,021	0,118	0,019	0,131	n	0,112
Share of spendings on innovation in total capital investment	0,067	0,298	0,104	0,293	0,074	0,277	0,08	0,351	0,076	0,347	0,067	0,349
Integral index	0,06	0,28	0,078	0,274	0,075	0,277	0,076	0,292	0,093	0,308	0,127	0,405
<i>Resource efficiency</i>												
Return on assets	0,018	0,013	0,016	0,012	0,013	0,012	0,014	0,014	0,019	0,015	0,022	0,019
Labour productivity	0,074	0,273	0,089	0,291	0,086	0,306	0,068	0,301	0,068	0,309	0,075	0,314
Integral index	0,046	0,143	0,053	0,152	0,05	0,159	0,041	0,157	0,043	0,162	0,048	0,166
<i>Economic activity</i>												
Return on operating activity	0,032	0,078	0,017	0,067	0,038	0,082	0,015	0,07	0,011	0,082	0,039	0,087
Return on assets	0,02	0,038	0,007	0,038	0,018	0,043	-0,059	0,039	-0,051	0,050	0,013	0,058
Return of turnover	0,024	0,046	0,009	0,049	0,026	0,056	-0,059	0,045	-0,059	0,056	0,011	0,069
Integral index	0,025	0,054	0,011	0,051	0,027	0,06	0,034	0,051	0,033	0,063	0,021	0,071
General Integral Index	0,126	0,251	0,13	0,209	0,132	0,2	0,103	0,169	0,146	0,187	0,145	0,224

Author's calculations based on [7, 8].

The level of innovation activity of the industry in Podkarpackie Voivodeship is more than 3 times higher than in the Lviv region. This is due to the relatively higher values of all the indicators analyzed, which characterize this competitive advantage. Instead, according to the level of capital activity of the industry, the Lviv region dominated the Voivodship in 2013-2014 due to the substantially higher (in particular, more than 5 times in 2013) the rate of

growth of non-current assets. However, the share of non-current assets in the industry's assets in the region, as compared to the voivodship, is low and tends to further decrease - 37.4% in 2016, against 53.7% from 2013.

In terms of investment activity, Lviv region prevailed in Podkarpackie Voivodship during 2013-2016. This is due to higher rates of growth of capital and FDI in the oblast's industry. In contrast, the Voivodship has a higher share of industry in the total volume of foreign direct investment, due to the higher level of investment attractiveness of the industry in this region.

The export activity of the industry in the Lviv region during the analyzed period was higher than in the Podkarpackie Voivodship and resulted in a higher (by 6.8 pp in 2016) the share of industrial goods in the export of goods and services, which, however, tended to decline. Instead, for the voivodship, the share of exports in the volume of industrial products sold is slightly higher (by 1.6 percentage points).

The level of industrial activity in the Lviv region was generally higher than in the Podkarpackie Voivodship. This is due to the growth in the growth of volumes of industrial products sold, especially in 2014-2016. At the same time, the province's industry dominated (except for 2014) by the share of industrial output in the volume of sales of products (goods and services), which is a sign of a somewhat higher level of industrialization of the economy of this region.

To summarize, it can be argued that in 2015-2016 the gap between the levels of competitive advantage of the industry in Lviv region and Podkarpackie Voivodship increased significantly in favor of the latter. The highest advantages of the voivodship are due to the significantly higher level of economic, resource and innovation activity of its industry, as well as the higher level of capitalization of the latter. It follows that the industrial sector of the economy of the Podkarpackie Voivodship (in comparison with the similar sector of the economy of Lviv region) is more efficient and innovative.

5. Conclusions.

The main problem of the domestic industry is the low efficiency of financial and economic activity. The reason for the loss in turnover and, at the same time, the assets of the domestic industry is an excessive amount of other (not related to the main activities) costs. These costs include:

- financial expenses - shows expenses on interest and other expenses of the enterprise, connected with borrowings;
- Loss from equity - reflects the loss on investments in associates, subsidiaries or joint ventures, which are accounted for using equity method;
- other expenses - fix the cost of realization of financial investments; losses from non-operational exchange rate differences; losses from the deduction of financial investments and non-current assets; costs of enterprises from changes in the carrying amount of financial instruments that are measured at fair value; other expenses incurred in the course of economic activity (other than financial expenses) but not related to the operations of the enterprise).

Given the opaque content of the vast majority of articles of these expenditures (and especially "other"), there is a need for their detail in the company's financial statements for the purpose of increased control by the State fiscal service of Ukraine.

To improve the innovation of the industrial sector of economy of Lviv region, on the one hand, it is necessary to improve the macroeconomic conditions of the operation of the subjects of industrial activity in Ukraine in the direction of promoting the expansion of domestic demand for domestic industrial products and increasing its supply, as well as improving the quality management system of industrial products and accelerating the international certification of enterprises, and, on the other hand, increase the efficiency of

investments and the level of implementation of innovations in production. There is also a need for a gradual reorientation of investment flows in the development of high-tech industries, in particular through tax and customs incentives for domestic investors and state guarantees for foreign protection. An effective tax incentive can be a reduction in the tax rate on income (or tax holidays) for high-tech manufacturers, while increasing the rate for commodity producers. This may be of interest and involve small and medium-sized businesses in the process of investing in high-tech industries.

In its turn, the expansion of opportunities for the introduction of innovations into the industry requires:

- development of innovation infrastructure in the region by creating innovative clusters or technological parks (for example, Poland¹), in particular on the basis of institutes of the National Academy of Sciences of Ukraine;
- monitoring, on the one hand, the needs of enterprises in innovations, and, on the other hand, developments in the research and development institutions intended for sale, and the creation on this basis of the information catalog of innovations on the basis of the "supply-demand" principle;
- formation of an effective organizational and financial mechanism for the support and development of innovation activities by providing financial and credit assistance to economic entities that implement investment projects of innovative direction, in particular in energy and resource conservation;
- organization of an effective network of "science-production" based on the establishment of technology transfer centers for combining the potential of science, production and financial capital (with the involvement of small and medium-sized businesses).

To increase the access of industrial enterprises to investment resources, in particular foreign ones, it is necessary to:

- formation of a system of monitoring of investment projects implemented in the framework of public-private partnership, and continuous monitoring, in particular public, for their implementation in order to prevent inefficient use of capital investments;
- conducting an annual rating assessment of the investment attractiveness of the administrative-territorial units and leading commodity producers in the region, with further placement of its results on the investment portal of the region;
- creation of conditions for closer cooperation of the region with European organizations and funds engaged in financial support of regional development within the framework of international cooperation programs, in particular EU funds through the instruments of the Neighborhood and Partnership, border cooperation programs, other international programs and donors (the World Bank, the European Bank for Reconstruction Development, European Investment Bank, etc.).

Author details (in Ukrainian)

ПОКАЗНИКИ АКТИВНОСТІ І ЕФЕКТИВНОСТІ ПРОМИСЛОВОСТІ ЛЬВІВСЬКОЇ ОБЛАСТІ І ПІДКАРПАТСЬКОГО ВОЄВОДСТВА

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¹ An example is the successful operation of Krakow Technopark (KTP), founded in 1997, and an innovative business incubator operating within its borders. The founders of the KTP were: Jagiellonian University, Mining and Mining, Krakow Polytechnic, Krakow, Malopolska Voivodship, Kopermy nad. T. Sendzimir, State Treasury. That is, KTP is a joint project of the city, region, state and leading universities in Krakow. KTP has developed Krakow's innovation development strategy, created 3,900 jobs, has attracted more than 500 million zlotys of investment resources and is waiting for another 400 million, has 10 companies and issued permission to create another 22.

Анотація. Запровадження зони вільної торгівлі між Україною і країнами-членами ЄС актуалізує проведення транскордонних порівняльних оцінок задля виявлення конкурентних переваг промислового сектора національної економіки. Коректною такою оцінкою є для промисловості Львівської області і Підкарпатського воєводства як сусідніх регіонів, подібних за багатьма соціально-економічними показниками. Метою статті є проведення порівняння функціонування промисловості Львівської області і Підкарпатського воєводства за системою показників, які характеризують рівень ефективності та активності суб'єктів промислової діяльності.

Шляхом інтегрування множини первинних показників, що відображають виробничо-господарську і ресурсну ефективність, а також економічну, виробничу, капітальну, інноваційну, інвестиційну і експортну активність суб'єктів промислової діяльності, розраховано відповідні індекси, які в сукупності визначають рівень конкурентності промислового сектора економіки.

Результати аналізу загального інтегрального індексу (середньогогеометричне значення 7-ми індексів) виявили, що рівень конкурентності промисловості Підкарпатського воєводства в усі роки аналізованого періоду був вищим, аніж промисловості Львівської області. Найбільшим цей розрив став у 2015 році (0,333 пункти), однак у 2016-му скоротився до 0,079 пункти. Останнє свідчить про відчутну активізацію промислової діяльності в Львівській області

Найбільше в області зросли значення показників економічної ефективності та інвестиційної активності. Натомість абсолютно незадовільним у Львівській області є рівень ресурсної ефективності та інноваційної активності промислових підприємств. Як наслідок, продукція багатьох вітчизняних товаровиробників на сьогодні є неконкурентною на зовнішніх ринках. Для вирішення цієї проблеми необхідно, з одного боку, покращити макроекономічні умови функціонування суб'єктів промислової діяльності в Україні у напрямку сприяння розширенню внутрішнього попиту на вітчизняну промислову продукцію і збільшенню її пропозиції, а також удосконалення системи управління якістю промислової продукції та прискорення міжнародної сертифікації підприємств, а з іншого – підвищити ефективність капіталовкладень та рівень упровадження інновацій у виробництво.

Ключові слова: промисловість, активність, ефективність, інтегральні індекси.

Appendix A. Supplementary material

Supplementary data associated with this article can be found, in the online version, at <http://sepd.tntu.edu.ua/images/stories/pdf/2018/18slyapv.pdf>

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