

DYNAMICALLY-STATISTICAL ESTIMATION OF EVALUATION OF TRADE BY INDUSTRIAL PRODUCTION IN TRANSBORDER ECONOMY CONDITIONS

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ABSTRACT

Lviv region are important components of the manufactured in Ukraine. It is due to location on the borders of the territory of EU member states. During the evaluation found that in 2014–2018 have been observed deterioration of exports and imports of industrial products in Lviv region. The first one has been characterized by a tendency to instability, reflecting changes in market conditions. About export, its area have been dominated by wood products and light industry, machinery, food etc. The imports of production in the most commodity groups has been characterized by recession, as a consequence of the devaluation of currency. The basis of imports in Lviv region have been engineering products. The economy analysis allowed us to determine that exporter of industrial products in the region is the processing industry. In the article has been proposed by the authors a set of measures aimed at strengthening industrial evaluation and increasing the export potential of region in terms of free trade.

Key words: dynamically-statistical estimation, evaluation, industrial production, tendencies, international trade, transborder economy.

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1. Introduction

The importance for the development of a market economy in Ukraine is the entry of its national economy into the system of world economic ties. The deepening of participation in globalizing global and European integration processes involves the development of industrial enterprises and industrial

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activities, accompanied by an increase in the competitiveness of the industrial production and industrial products, orientation to the external market and conduct of international economic activity.

The foreign economic relations, which are based on export and import operations, allow the competitor to fully realize the advantages of the international division of the labor, open access to advanced technologies and managerial experience, significantly affect the rates of economic growth and contribute to increasing the national income of the country, etc. Under these conditions, it is quite natural to have the interest and the need for adequate, reliable, objective, timely information on the dynamics and trends, the prospects, priorities of the development of foreign economic operations in Ukraine.

This is relevant for export and import operations not only in the domestic industry (at the country level), but also for industrial activities in the regions. Such information is necessary for the effective management of export and import operations in industry and its modernization at the micro, meso and macro levels of the national economy of the country. In this light, the special importance and significance becomes adequate to market transformations, which are aimed at integrating the country into the European and world economic spaces, assessing the state of export and import operations in the industry of the border regions as a source and method of forming a system of indicators of economic analysis of the external economic aspect, production and economic activity of Ukrainian industrial enterprises.

2. Purpose

It is to assess the current state and prospects of the development of export and import operations in the industry of the Western region of Ukraine by product groups, taking into account the main requirements of the Free Trade Area between Ukraine and the EU member states.

3. Methodology and methods

The main objects of evaluation and economic analysis in the article is the commodity structure of export and import in the industry of the Western region.

The achievement of the set goal and fulfillment of tasks (the assessment, analysis of the current state and prospects of development of the export and import operations in industry of the Western region by the commodity structure of export, the import on the example of the Lviv region, taking into account the requirements of the Free Trade Area between Ukraine and the EU member states) provided the use of general scientific, intersectoral, interdisciplinary and the special methods of conducting research. In this special is the method of ABC-analysis. Thus, its

use in practice allows us to systematize commodity groups by the degree of priority in structure of export and import operations in the industry of the Western region – in the export of industrial products or imports.

4. Results

The markets of industrial products in the EU member states are the largest and the most important for the Lviv region, the Western region, and for Ukraine. According to statistical information, the share of Ukraine exports and imports to EU member states increased annually by an average of 3% from 2015. At the same time, the share of Lviv region in exports of goods from Ukraine to EU amounted to 6.7% in 2018, compared with 5.5% in 2016. The export share of the Lviv region to the EU member states in the export of goods in region was equal to 71.9%, imports – 68.5%.

Taking into account these arguments and facts, the actual task is to carry out a statistical assessment of the current state of development of Ukraine export and import operations in the industry of Lviv region. For commodity groups, taking into account the main requirements of the Free Trade Area agreement between Ukraine and the EU. Moreover, an assessment of the state of development of export and import of industrial products in Lviv region of Ukraine provides for taking into account sectoral, economic, spatial and regional peculiarities of the formation of foreign economic activity.

The assessment and analysis of dynamics of groups of products of the processing industry in Lviv region according to the main commodity groups, the EU and non-EU countries have been guided by the criterion of geographical orientation (Table 1).

Table 1. The export trends of processing industry products in the West Ukraine (Lviv region), %

Groups	Names	Export							
		to EU				to other countries			
		2014	2015	2016	2017	2015	2016	2017	2018
1	2	3	4	5	6	7	8	9	10
I	products of animal origin	-51.7	-8.2	13.4	53.8	2818	-32.9	90.4	1.1
II	products of vegetable origin	21.4	57.3	-1.9	34.1	21.8	50.5	-1	-342
III	fats and oils of animal origin	281	-83.8	150	-2	107	-72	-61.8	95.9
IV	ready-to-eat foods	179	219	-22.6	-61	40.1	-22.3	29.7	25.2
V	mineral products	-99.2	-39.1	-21.4	350	-95.1	-85.4	124	-63.1

1	2	3	4	5	6	7	8	9	10
VI	products of the chemical industry	-31.2	4.1	63.5	-43.9	-11.8	-4	-63	-63.2
VII	polymer materials and plastics	3.8	-19.8	44.4	-1.1	18	-7.1	-24.1	-41.8
VIII	skins are untreated, the skin	3.8	39.5	-1.5	2.9	43	56.2	-3	-101
IX	wood and products from it	-23.5	-5.9	66.4	-0.9	41.2	-1.2	-40.2	-36.4
X	mass of wood (cellulosic materials)	7.2	26.8	-7.3	-28.7	17.5	28.5	-11.8	-29.5
XI	textile materials and products	-18.5	-2.7	9.9	-8.4	-3.9	12.3	-10.6	-29.1
XII	shoes, hats, umbrellas	-10.9	3.9	-2.8	-34.1	-1.2	1.4	-16.5	-46.4
XIII	articles made of stone and plaster	51.5	18.4	-9.3	-2.2	-18.9	6.3	-37.5	38.1
XV	non-precious metals and wares	-30.4	29.3	2.6	-6.8	-19.5	18.6	-6.2	-62.6

Source: grouped by (Use of..., 2018; Ukraine's..., 2018; Estimation of..., 2016; Commodity..., 2018; Commodity..., 2017).

As we can see in Table 1, I and V group belonged to industrial commodity groups with the growing export tendency. The growth of the level of exports of the products of animal origin to the EU member states was 40.4%, compared to 2016.

The main positive trend in the export of mineral products (by 371.5%, compared to 2016) was caused by an increase in export volumes of mineral fuel, oil and refined products by 81%, relative to 2016. These commodity groups occupied a negligible share (0,2% in 2015, compared to 3.4% in 2013) in the structure of exports of Lviv region, they had little impact on the export potential of region industry.

Commodity groups with unstable tendency of export in industry of Lviv region. we can partially divide into clusters with high and moderate instability. Reducing the volumes of export of the industrial products is more likely in the commodity group with high instability, as they are so much more sensitive to changes in market conditions, whereas products and moderate groups are relatively easier on modern economic ones (primarily domestic and foreign markets).

It should be noted that the industrial goods groups the VI and IX, as well as textile materials and the products from them until 2015, showed growing tendencies (for example, the export of the chemical products increased to 59.4%, compared to 2014). However, a number of changes that took place in the domestic

market of Ukraine in 2015 negatively affected such commodity groups; thus, there was a decrease in the level of exports of chemical industry products – to 107.4% (including protein substances – 239%, compared with 2016). The recent economic studies have shown that the main prerequisite for the formation of negative trends in development of export operations in chemical industry of Lviv region in 2018, were a decline in volumes of production.

In particular, reducing the export of wood to 67.3% in 2018, compared to 2016, was due to the fact that the cost of Ukrainian raw materials was closer to Europe. So this caused a decrease in the demand for wood and products from it. Another factor in reducing the level of demand for domestic the raw materials was the introduction of a moratorium on the export of unprocessed wood and sawn timber (*Estimation...*, 2016).

Regarding the export of ready-made the food products in 2016–2018, the recent economic studies have shown that a significant decline in export operations (to 241.5%, compared to 2015) was caused by the introduction of EU export quotas for imports of domestic or Ukrainian industrial products, for example, juices – they are products of processing of vegetables and, accordingly, the processing industry, a conservatism and the sufficiency of supply on the markets of the EU.

To the main key commodity groups (more precisely subgroups) with the unstable tendency of exports in the industry of Lviv region. Equally, the fats and oils of animal origin, vegetable processing products, residues and wastes of the food industry, protein substances, as well as land transport, except for railways.

The dynamics of the export of industrial products by some of the product groups also depended on the geographical orientation of its exports – to EU or other countries. For example, in the process of conducting export operations by the industry of Lviv region. with EU with the groups VII and IX, XVI, there was a domination of unstable tendencies, while in the case of other countries, the prevalence of a decline in exports.

The prevalence of commodity groups with moderate instability of exports in the industry of Lviv region (to the EU and other countries) was characteristic of the mass of wood and shoes, hats, umbrellas, articles made of stone, cement and plaster, as well as for XV. The dynamics of export of industrial products from other commodity groups to other countries in 2016–2018 was marked by a decline. The exceptions to the rule were product groups III and VIII.

The imports of industrial products from EU member states in Lviv region during 2013–2018 was mostly characterized by a downturn or instability with the negative tendency in commodity groups. At the same time, the dynamics of import of industrial products in the Lviv region from the other countries did not always coincide with the dynamics of import of goods from the EU member states. But despite this, in general, the dynamics of import of the industrial goods was also decreasing (to -28% in 2018, relative to the previous year). Thus, the dynamics of

imports of industrial products from the other countries in a number of commodity groups – the fats and oils of animal origin (floral origin), ready-to-eat food, the wood and products of it, textile materials and the products, machinery, equipment and machinery – was diametrically opposed to that, which was observed in the import of products from the EU member states. This fact indicates an increase in the level of diversification of imports in the region (Table 2).

Table 2. The import trends of processed products in the West Ukraine (Lviv region), %

Groups	Names	Import							
		from EU				from other countries			
		2015	2016	2017	2018	2015	2016	2017	2018
I	products of animal origin	94.5	-48.9	-42.5	-47.1	-199	-387	-0.4	-132
II	products of vegetable origin	19.4	-17.4	-32.7	-26.6	25.5	-24	-44.6	-318
III	fats and oils of animal origin	-18.1	-23.7	3.1	-25.4	27.1	69.2	-88.2	263
IV	ready-to-eat foods	9.6	24.2	-14.9	-30	46.5	-24.6	7.5	-8.3
V	mineral products	33.3	14.4	-4.2	-94	0.2	-72.6	59.2	-85.3
VI	products of the chemical industry	8.5	7.6	-28.6	-29.9	-11.6	-96.4	-157	-756
VII	polymer materials, plastics	-15.1	-2.7	-17.1	-15.1	-15	27.5	-2.4	-24.5
VIII	skins are untreated, cleaned skin	20.2	82.1	57	-8.5	21.3	78.7	62.5	-141
IX	wood and products from it	-37.1	7.3	-33.4	-44.4	28.9	11.2	-79	-33.9
X	mass of wood	-7.5	10.8	-19.5	-28.2	12.4	1.8	-14.8	-32
XI	textile materials and products	-9.1	3.3	-8.8	-4.2	21.4	7.7	11.3	-8.7
XII	shoes, hats, umbrellas	9	15.8	-19.9	0.4	80.5	101	19.5	31.4
XIII	articles made of stone and plaster	4.2	13.4	-29	-35.4	11.3	-22.8	22.1	16.2
XV	non-precious metals and wares	-22.9	-3	-30.1	94.3	12.9	6.7	-30.2	-1.2
XVI	machinery and equipment	-20.5	18.5	-3.2	-13.8	10.2	-8.3	-30.5	-11.3
XVII	land transport and aircraft	43.8	-32.8	-41.1	3.3	93.4	-48.6	-63.3	349
XVIII	devices and apparatus optical	4.2	63.5	4.2	-27.7	-18.2	19.2	-29	18
XX	various industrial goods	5	12.8	3.7	-26	28.6	-27.1	-15.6	-25.3

Source: grouped by (Use of..., 2018; Ukraine's..., 2018; Estimation of..., 2016; Commodity..., 2018; Commodity..., 2017).

To the commodity group with a tendency to a constant decline in imports of the industrial products in Lviv region. From EU, products of animal origin (to 4.6%, against 2016), mineral products (89.8%), chemical industry products (1.3%).

Commodity groups, in which there was a clearly unstable tendency of imports of industrial products in Lviv region from EU member states, we propose to partitionally divide them into groups with high and moderate instability. So, commodity groups with high unstable tendency of import of industrial products in Lviv region in 2018, the fact that the decline in their imports started in 2016 is the latest. The recent economic studies have shown that an important and reason for this was the devaluation of the national currency of the Ukraine. A significant further devaluation of UAH caused a decrease in demand for industrial products from abroad.

Instead, in the industrial commodity groups that were less sensitive to changes, the positive dynamics of the import of industrial products in the Lviv region began to be observed from the EU member states and the other countries in 2018. In particular, it concerned the group of textile materials and products, the import of which in the region in 2018 increased to 4.6%, as compared in 2016. Therefore, the presence of the positive dynamics of imports of industrial products in the oblast there is evidence in favor of the restoration of demand for imported products, and, at the same time, the lack of desire in enterprises and the impossibility of the inability to replace it with domestic products.

A pronounced dominant commodity group with a negative growth in imports of industrial products in Lviv region, from the EU member states, V was the mineral fuel, oil and the refined products. The emergence of a negative trend in the development of export and import operations in the industry of Lviv region in 2018, there is a need to reduce domestic consumption of industrial products. Thus it is evident from this that the leading commodity groups with an unstable tendency to import industrial products in the Lviv region from EU and other countries were railway the locomotives and devices, optical and photographic apparatus. In addition, there was a significant fluctuation in the level of imports of the industrial goods of groups VIII, IX and VII.

The structure of export of industrial products from Lviv region to the different EU member states during 2014–2018 was somewhat similar to the general structure of Ukraine's exports, but less diversified. An important and the basic component of the export of industrial products in the Lviv region to the EU were machines, equipment, including electrical engineering and mechanisms (the group XVI). Thus, the share of their exports to EU member states during 2013–2018 amounted to 34.4% on average. At the same time, the electric machines themselves were an important and leading industrial product in export of Lviv region to EU (the average annual share of electrical machinery in the relevant group amounted to 93.5% in the analyzed period of time).

The second place in the export of industrial products in the Lviv region to the EU member states in 2014 – 2018 was textile (it is the group XI), however, during 2014–2016 its share in the industrial product group decreased to 6.6%, as compared in 2014 (from 22.7 % in 2014 to 16% in 2016). The main part of the

export of textile products was presented with clothing and various additional things to it (for example, knitwear and the textiles). The other, equally important commodity groups for the region and the western region, occupied the following shares in the structure of export of industrial products of the Lviv region: wood and wood products with an average annual value of 9.8% vs. industrial goods (7.7%).

The largest positive changes in the industry of Lviv region during 2014–2018, export of the vegetable products (from 2.8% in 2014 to 6.3% in 2018). The bulk of the export of products of plant origin, commodity group II in the Lviv region to the EU member states was represented, for the most part, by industrial products, which does not require obtaining permissions for its export by the governments of the countries of the Union. This, by the way, is the seeds and fruits of oilseeds.

In the structure of exports of Ukraine and Lviv region in 2014–2018 there was a significant fluctuation in the share of ready-made food: during 2012–2013, it increased from 11% to 17.3 per cent in 2013, and in 2014–2018 this share sharply decreases by an average of 6% (to 5.2% in 2018). It is worth noting that in the group of ready-made food there were internal changes for the analyzed period of time. Their consequence was the prevalence of exports of residues and wastes of the food industry in different years. The share of residues and wastes of the food industry in the commodity group in 2014 corresponded to value of 33%, in 2018 – to 58%; whereas the share of vegetable processing products in exports in the industry of Lviv region to EU was 78% in 2016.

The analysis of statistical information showed that the share of exports of sugar products, as well as sugar confectionery in exports in the industry of Lviv region to the EU in 2014–2018 have significantly decreased. The share of sugar and confectionery products from sugar amounted to 14% of the export of finished food products in 2015, whereas in 2018 it already decreased to 11.6%.

Consequently, from the results of economic research, it follows that the reduction of the share of ready-made food products in exports in the industry of Lviv region to the different EU member states during 2014–2018 is due not only to the use of export quotas (in particular, juices, processed tomatoes and sugar) in relation to Ukraine, but also the tendency towards a significant decrease in the level of consumer prices for industrial products in the markets of the Europe.

So, the industrial commodity groups in the overall structure of Ukraine's exports tended to increase to 5.3% (from 80% in 2014 to 85.3% in 2018). In the structure of the country's exports to the EU member states were presented the fats and oils of animal (vegetable) origin, as well as mineral products and products of the chemical industry.

Compared to Ukraine, the commodity structure of the industrial products import in the Lviv region from the EU member states during 2014–2018 was more sabotage-fictitious. The following groups of products in the structure of the import

of industrial products from the EU member states included: ready-made food products, mineral fuels, machinery, equipment (including the electrical engineering) and mechanisms, polymer materials and plastics and articles thereof, chemical industry products, mass from wood (cellulosic materials), non-precious metals and products from them.

Moreover, the structure of industrial products imports from different EU member states was represented by land transport, aircraft and floating means (the average annual share of them was 10.6% in 2014–2018). At the same time, the share of land transport, aircraft and the floating means in the import of industrial products of Lviv region was insignificant (on average 2.7% over the analyzed period of time).

As for the type of commodity structure of import of industrial products of Lviv region during 2014–2018, the following commodity groups were present in it, the shares of which significantly overlapped similar in the structure of imports of Ukraine for the analyzed period of time. These include, in particular, products of animal origin (the average annual value of their share in imports of Ukraine was 1.6% vs. 7.1% in the Lviv region) and textiles, articles (3% vs. 8.3% respectively).

In the structure of import of industrial products of Lviv region during 2014–2018, minority changes occurred in most commodity groups. Thus, in 2018, the share of machinery, the equipment and machinery increased (23.6% vs. 16% in 2014), as well as textile materials and products (up to 13% vs. 8%). Instead it, the level of the import of mineral products, including fuel of mineral etc. was marked by a rapid growth.

The recent economic studies conducted have shown that the rapid increase in the level of import of industrial products was due to the need for diversification of import of products. However, the share of imports of mineral products in the Lviv region from the EU dropped sharply to 2.6% in 2018. It was achieved through reorientation of Ukraine to the other external markets, crude oil savings of 4.5% and consumption (21.3%) (*Use of...*, 2018).

Also in the structure of import of industrial products of Lviv region from the EU member states during 2014–2018, the fluctuations in the shares of precious metals and their products (from 6.4% in 2013 to 3.6% in 2014 and 10.9% in 2018), the live animals and products of animal origin.

Insignificant fluctuations were observed in the import of such industrial products as polymer materials, plastics and articles thereof. The remaining share of chemical industry products (to 6.5%), wood (the cellulosic materials) – 5.5%, ready-made food (5%) and vegetable products (4.2%) remained unchanged. At the same time, the shares of these commodity groups in the structure of import of industrial products of Lviv region from EU in 2018 and occupied 86.9% (which is 3.3% less than in 2014).

For a comprehensive assessment of the export industry of Lviv region, according to the commodity structure, an ABC-analysis was conducted, which provides: firstly, calculations of the annual volume of export and import of industrial products by product groups; secondly, the calculation of shares, differentiation of the industrial commodity groups in the downward direction; calculations of accumulation sums of particles of industrial commodity groups; the conditional distribution of main industrial commodity groups by categories (A – groups whose cumulative amounts of shares do not exceed 80%, B – up to 95% (this is A + 15%) and C is more than 95%).

Consequently, the only five of the 18-th export product groups of the products of the processing industry in the Lviv region in 2018 formed 80% of its export potential.

In the category A export of products of processing industry of Lviv region in 2018, the following commodity groups belonged to EU and other countries: machinery, equipment and machinery, textile materials and products, timber and articles thereof, industrial goods; in 2018, herbal products were joined by her.

The category B in 2014 represented ready-made food products, fats and oils of animal origin, mineral fuels, precious metals and products thereof, vegetable products, products of the chemical industry, raw hides and skins were cleaned. At the same time, the category B decreased significantly in 2018, because A passed the products of plant origin (group II), while C – a mineral fuels (V) and products of the chemical industry (VI). The reduction in the level of export of industrial products of V and VI commodity groups in Lviv region to EU, other countries are evidence of a significant weakening of the position of industrial enterprises in the Europe, since products are not competitive in terms of quality and price.

In 2018, the category B replenished land transport, aircraft and floating means. The other commodity industrial groups belonged to the category C – it was evidenced by the insignificance of share in the export of industrial products of the Lviv region.

The basis of import of industrial products in the Lviv region from EU member states and the other countries, in 2018, product groups of the category A. These include, for example, machinery, equipment and machinery (the industrial product group XVI), textile materials and articles (the product group XI), polymer materials, plastics and articles (the group VII), non-precious metals and articles thereof (XV), products of the chemical industry (VI). Instead, category A in 2014 consisted of mineral fuels, but their position in 2018 deteriorated.

To the category B, which formed 15% of the import of industrial products in the Lviv region in 2018, following commodity groups belonged: ready-to-eat foods, weight of wood (cellulosic materials), raw hides and skins, the vegetable and animal products, land transport, aircraft, floating means, mineral fuels.

Compared to 2014, the category B includes fewer industrial product groups, VIII belonged to C, while V – to A.

It should be noted that wood and products from it (the product group IX), various industrial goods (XX) in the structure of imports of industrial products of Lviv region in 2014, in 2018 belonged to the category C. In turn, this has been demonstrated by the insignificance of their shares in the import of industrial products in the region from the EU and other countries, as these groups form the category A of the region's exports.

The largest export potential in the Lviv region during 2014 – 2018 was typical of the main industrial product groups, which belong to the category A. This applies to the following types of processing industry in region: the production of electrical equipment, the clothing and food products (recall that the last group belonged to the category A in 2015), wood processing and manufacturing of it, textile production etc. In other words, it concerns the export of industrial products in the Lviv region to EU and other countries whose demand level fluctuated under the influence

5. Conclusions

The generalization of the results of the conducted assessment of the dynamics of export and import operations in the industry of Lviv region by product groups during 2014–2018 allowed to distinguish characteristics of development of foreign economic operations in industrial activity and foreign trade activity of industry. We can refer to positive changes and trends in foreign economic activity in the industry of the region:

- a steady increase in the level of exports of live animals, products of animal origin, mineral products in the Lviv region, as in Ukraine, accompanied by a steady decline in imports in these industrial product groups;
- the lack of export commodities in the industry of the Lviv region, as in Ukraine, in which the steady decline in the export of industrial products to EU was recorded;
- the maintaining the position of wood and wood products, electrical equipment, machines and mechanisms, textile materials and textiles in the category of main priority commodity groups in the export industry in the region;
- the improvement of the position of products of plant origin in general structure of export of industrial products in the region (transition of the group to the category A); the reduction of imports of industrial products in region from the EU (from the position of import substitution).

The results of the analysis of the current state of development of export-import operations in the industry of Lviv region allowed to reveal some of the negative trends in development of the foreign economic activity of the region's industry:

the growth of negative values of indicators of the growth of export of industrial products in the region; the change in export trends in region industry to fall in 2018 by the following product groups – wood, chemical products, textile materials (considered as priority groups); the deterioration in chemical industry's ranking (its transition to the category C in 2018); a small part of industrial products export in Lviv region in Ukraine's exports to EU (6.7% in 2018) etc.

To activate the foreign economic activity of industry in the Lviv region. in the Western region, including increasing the export potential of the region in the Free Trade Area with the EU, we propose the following: to develop a program for increasing the efficiency of the development of export the industrial products, which would ensure the organization of obtaining reliable, necessary and to complete information, providing qualified consultations and the operational support to industrial producers; to attract financial resources of local budgets and direct capital investments in the implementation of infrastructure projects, development of industrial activities.

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