## РОЗДІЛ 1.
## НАЦІОНАЛЬНА ТА РЕГІОНАЛЬНА ЕКОНОМІКА

## 1.FEJEZET.
## NEMZETI ÉS REGIONÁLIS GAZDASÁG

## CHAPTER 1.
## NATIONAL AND REGIONAL ECONOMY

**DOI:** https://doi.org/10.58423/2786-6742/2022-2-13-23
**UDC** 338.45:621-047.44(477)

**Nina POYDA-NOSYK**
DSc in Economics, Professor, Professor at the Accounting and Auditing Department
Ferenc Rakoczi II Transcarpathian Hungarian College of Higher Education,
Beregove, Ukraine
**ORCID ID:** 0000-0002-5378-8028
**Scopus Author ID:** 57223373444

**Robert BACHO**
DSc in Economics, Professor, Head of the Accounting and Auditing Department
Ferenc Rakoczi II Transcarpathian Hungarian College of Higher Education,
Beregove, Ukraine
**ORCID ID:** 0000-0002-5957-7571
**Scopus Author ID:** 57006730200

# ANALYSIS OF THE AUTOMOTIVE INDUSTRY DEVELOPMENT TRENDS IN UKRAINE

***Анотація.*** *Невід'ємною та стратегічно важливою частиною машинобудівного комплексу України є автомобільна промисловість, представлена переважно легковими автомобілями. Десятки років тому Україна мала потужний автомобільний комплекс, який займав лідируючі позиції серед автовиробників Східної Європи. На жаль, автомобільна промисловість України сьогодні перебуває у складній ситуації через кризу вітчизняного потенціалу та інтенсивний негативний вплив численних факторів навколишнього середовища, а також широкомасштабне військове вторгнення Росії. Метою дослідження є розробка пропозицій щодо відродження автомобільної промисловості в Україні на основі аналізу сучасних тенденцій та економічного стану галузі. У роботі описано основні тенденції в автомобільній промисловості України за період 2016-2021 рр. Зазначається, що з 2014 року збройна агресія Росії проти України призвела до значного занепаду автопрому. Водночас у країні погіршилися економічні умови, що в свою чергу вплинуло на виробництво автомобільної промисловості. Досліджено, що автомобільна промисловість України представлена лише шістьма автомобілебудівними підприємствами, виробничі потужності яких становлять близько 250 тис. автомобілів на рік, включаючи великовузлове складання, а також низкою компаній, що виробляють комплектуючі та деталі для транспортних засобів. Останній сегмент формує 7,7% доданої вартості машинобудівної галузі України та характеризується середнім рівнем доданої вартості у виробництві (33,0% у 2020 році). Близькість до кордону з ЄС, дешева робоча сила та достатня кількість сировини роблять західні області України особливо привабливими для партнерства з європейськими автогігантами. Зроблено висновок, що наразі в Україні відсутній автомобільний кластер. Таким чином, подальші наукові дослідження можуть бути* *зосереджені на можливостях створення в Україні автомобільного кластеру у співпраці з провідними європейськими партнерами.*

***Ключові слова:*** *автомобільна промисловість, зовнішні фактори впливу, тенденції розвитку, динаміка виробництва автомобілів.*

**JEL Classification:** D24, L90

***Absztrakt.*** *Ukrajna gépgyártásának szerves és stratégiailag fontos része az autóipar, amelyet elsősorban a személygépkocsik képviselnek. Tíz évvel ezelőtt Ukrajnának hatalmas autóipara volt, amely vezető pozíciót töltött be a kelet-európai autógyártók között. Sajnos az ország autóipara ma nehéz helyzetben van a hazai termelési potenciál válsága és számos környezeti tényező intenzív negatív hatása, valamint Oroszország katonai műveletei miatt. A tanulmány célja, hogy a modern trendek és az ipar gazdasági helyzetének elemzése alapján javaslatokat dolgozzon ki az ukrajnai autóipar fellendítésére. A munka leírja Ukrajna autóiparának fő tendenciáit a 2016-2021 közötti időszakban. Megjegyzendő, hogy 2014 óta Oroszország Ukrajna elleni fegyveres fellépése az autóipar jelentős hanyatlásához vezetett. Ugyanakkor az országban romlottak a gazdasági viszonyok, ami az autóipar termelésére is hatással volt. Kimutatásra került, hogy Ukrajna autóiparát mindössze hat autógyártó vállalkozás képviseli, amelyek gyártási kapacitása évente körülbelül 250 000 autó, beleértve a nagyipari összeszerelést, valamint számos alkatrészgyártó céget is. Az utóbbi az ukrajnai gépgyártás hozzáadott értékének 7,7%-át adja és a termelés átlagos hozzáadott értéke jellemzi (2020-ban 33,0%). Az EU határának közelsége, az olcsó munkaerő és a kellő mennyiségű nyersanyag teszi Ukrajna nyugati régióit különösen vonzóvá az európai autóóriásokkal való együttműködés számára. A cikk szerzői arra a következtetésre jutottak, hogy jelenleg nincs egységes autóipari klaszter Ukrajnában. Így a további tudományos kutatások egy ukrajnai autóipari klaszter létrehozásának lehetőségeire irányulhatnak, melyet vezető európai partnerekkel együttműködve működne az ország területén.*

***Kulcsszavak:*** *autóipar, külső befolyásoló tényezők, fejlődési trendek, autógyártás dinamikája.*

***Abstract****. An integral and strategically important part of the Ukraine's machine-building complex is the automotive industry, represented mainly by passenger cars. Decades ago, Ukraine had a powerful automotive complex, occupying a leading position among automakers in Eastern Europe. Unfortunately, today Ukraine's automotive industry is in a difficult situation due to the domestic potential crisis and the intense negative impact of numerous environmental factors, as well as Russian large-scale military invasion. The aim of the study is to develop proposals for the revival of the automotive industry in Ukraine based on the analysis of current trends and economic condition of the industry. The paper describes the main tendencies in the automotive industry of Ukraine during the period 2016-2021. It is stated that since 2014, Russia's armed aggression against Ukraine has led to a significant decline in the car industry. At the same time, the country has deteriorated in economic conditions, which in turn has affected the production of the automotive industry. It is investigated that only six automobile companies represent the automotive industry of Ukraine and the production capacity of which is amounted to about 250,000 cars per year, including large-scale assembly, and by a number of companies producing components and parts for vehicles. The last segment generates 7.7% of the value added of the machine-building industry of Ukraine and is characterized by an average level of value added in production (33.0% in 2020). Proximity to the border with the EU, cheap labor and sufficient raw materials make the western oblasts of Ukraine especially attractive for partnership with European auto giants. It is concluded that there is currently no automotive cluster in Ukraine. Thus, the further scientific investigations may focus on opportunities for creating an automotive cluster in Ukraine in collaboration with leading European partners.*

***Key words****: automotive industry, external factors of influence, development trends, dynamics of car manufacturing.*

**Introduction.** Since 2014, Russia's armed aggression against Ukraine has led to a significant decline in the car industry. The military conflict between Ukraine and Russia has led to the severance of economic ties with the countries, and as a result, the cessation of production of VAZ cars. At the same time, the country has deteriorated in economic conditions, which in turn has affected the production of the automotive industry. Previously, more than 90% of passenger cars and more than 16% of commercial vehicles made in Ukraine were exported to Russia.

The problems of the inability of domestic automotive companies to compete with foreign manufacturers and the inability of Ukrainian automotive products to fully meet the needs of Ukrainian consumers have become apparent. At the same time, the openness of the domestic market of Ukraine determines the high level of its saturation, primarily with imported automotive products, which reduces demand for Ukrainian cars and reduces attractiveness due to the displacement of imported cars. There was an aggressive expansion into the Ukrainian market of vehicles from Russia, Belarus and Uzbekistan. The level of import penetration as of 2016 was 0.93, in 2019 - 0.93, in 2020 - 0.95. For comparison: in 2008 this figure was 0.47. That is, every year the share of sales of primary new domestic automotive products in Ukraine decreased, and the share of sales of primary new imported automotive products in Ukraine increased and as of 2020 the latter was over 95%.

Domestic manufacturers are negatively affected by the lack of state support, as well as the presence of serious pressure from the expansion of foreign cars. In addition, the conditions caused by the signing of the Association Agreement with the EU and accession to the WTO were clearly losing to the domestic engineering industry, and as a result, preferences for domestic vehicle manufacturers were abolished. In addition, there was a lack of consistent and active government action to prevent the crisis in the automotive industry.

**Literature review.** The history of the development of the Ukrainian automotive industry and its state support, the problems of optimizing the activities of automotive enterprises using modern technologies and assessing the level of their competitiveness are studied in the works of such scientists as M. Dmytrychenko, M. Kyzym, O. Kryvokon, M. Mishchenko, G. Pasov, A. Redzyuk, V. Chupryna, I. Shevchenko, O. Yazvinska and others. Particularly, in the monograph of I.Yu. Shevchenko, the author proposed a systemic view on progress of the automobile industry as well as developed a methodology for assessing competitiveness and a concept of the state program for the growth of industry until 2025 [1]. The work of Y. Savelyev, V. Kuryliak, K. Darvidou, M. Lyzun, I. Lishchynskyy [2] is devoted to the issues of transformation of Ukrainian Automotive Industry on the basis of introduction of electric vehicle production. However, the rapid change in business conditions and global challenges affects the development trends of the automotive industry not only in Ukraine, but throughout the world, which requires updating such research.

**Goals of the article.** The aim of the study is to develop proposals for the revival of the automotive industry in Ukraine based on the analysis of current trends and economic condition of the industry.

**Research results and discussions.** Ukraine's automotive industry has declined significantly since declaration of its independence, and the periodization of this process can be described as follows:

1. The automotive potential of Ukraine was laid in Soviet times. Until 1991, the automobile complex of Ukraine included 4 automobile plants: for the production of passenger cars - Zaporizhia and Lutsk car plants; for the production of trucks - Kremenchug Automobile Plant; for the production of buses - Lviv Bus Plant. The projected annual capacity was for Zaporizhzhya Automobile Plant - 300-350 thousand units, Lutsk Automobile Plant - 17 thousand units, Kremenchug Automobile Plant - 35 thousand units, and Lviv Automobile Plant - 16 thousand units. Automobile plants served more than 60 enterprises of Ukraine, which produced components, and more than 300 enterprises of various branches of the USSR. The loss of former markets and the lack of understanding of the new business conditions led to the achievement in 2000 of a historic low of production activity in the automotive industry of Ukraine.

2. The impetus for the revival, especially of the automobile industry, was the establishment of partnerships with South Korean automakers Daewoo, Kia, Hyundai on the joint production of cars and the organization of car assembly activities on the basis of Ukrainian car plants. In the early 2000s, investors invested more than USD 1 billion in the development of such modern enterprises as: Eurocar plant in Transcarpathia - a project designed to produce up to 100 thousand cars a year; Bogdan Corporation plant in Cherkasy - a new modern enterprise with a full production cycle of up to 150 thousand cars per year; renovation and large-scale re-equipment of the Zaporozhye Automobile Plant (150 thousand cars per year) and a number of other industries. More than 37,000 people worked at car assembly plants alone. The share of the industry in total GDP reached 4%, and its export revenue amounted to almost USD 900 million.

3. 2008 was a fatal year for the domestic automotive industry. In connection with Ukraine's accession to the World Trade Organization, preferences for domestic automakers were abolished and the rate of import duty on imported cars was reduced. The automobile complex of Ukraine was not ready to compete effectively with foreign automobile concerns. Coincidentally, it was at this time that Ukraine's economy was negatively affected by the global financial crisis. As a result, in 2009 the volume of car production in Ukraine decreased by 83.6% - this is the most significant decrease in car production in the world.

4. Today, the automotive industry of Ukraine is represented by only six companies - PJSC "ZAZ" (since 2016 it is called PJSC "Promavtoinvest"), Corporation "Bogdan", PJSC "Eurocar", Corporation "Etalon", PJSC "Bus Chasivoyarsky Plant", PJSC "Cherkasy bus". PJSC Eurocar and PJSC ZAZ remained the only car manufacturers, producing 7,377 cars in 2021 (Table 1, Fig.1).

**Table 1 - Dynamics of manufactured cars in Ukraine in 2016-2021, units***

| Types of cars | Years | | | | | | Deviation 2020/2016 | |
|---|---|---|---|---|---|---|---|---|
| | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | +/- | % |
| Passenger Cars | 4340 | 7296 | 5660 | 6254 | 4202 | 7342 | +3002 | +69 |
| Commercial Vehicles (CV) | 123 | 486 | 132 | 136 | 51 | 35 | -88 | -72 |
| **TOTAL** | **4463** | **7782** | **5792** | **6390** | **4253** | **7377** | **+2914** | **+65** |

* Retrieved from: [3, 4]


**Fig. 1. Dynamics of manufactured cars in Ukraine in 2016-2021, units**

In general, for the period 2016-2021, the total number of manufactured cars increased by 65.3%, with an increase in passenger car production (+ 69.2%) and a significant decrease in commercial vehicle production (-71.5%).

As of 2021, the production capacity of automobile enterprises in Ukraine amounted to about 250,000 cars per year, including large-scale assembly, in particular, ZAZ (150,000 units), Eurocar (50-100,000 units), Cherkasy Bus (20,000 units). At the same time, since 2008 part of the production capacity - more than 200 thousand cars a year - has been liquidated. These are KrASZ (40,000 units), Vipos (45,000 units), Illichivsk Automobile Units Plant (50,000 units), KrymavtoGAZ (5,000 units), Bogdan Corporation (50,000 units).

Bogdan is an automobile corporation, one of the main operators of the automobile market of Ukraine. In July 2021, the corporation was declared bankrupt and liquidation proceedings were initiated. In the analysis of manufacturers, the data of Bogdan Corporation were used for the period 2016-2020.

Before the beginning of the Russian invasion in February 2022, such enterprises as PrJSC "Zaporizhzhya Automobile Building Plant" and PrJSC "Eurocar" were engaged in the production of passenger cars. Most manufacturers were involved in the field of bus construction: PrJSC “Zaporizhzhya Automobile Plant” (PrJSC "ZAZ"), Corporation "Bogdan", PrJSC "Boryspil Automobile Plant", PrJSC "Chasivoyarsky Buses", PrJSC "Chernihiv Automobile Plant" and PJSC "Cherkasy Bus". The latter one also produces commercial vehicles.

PrJSC "ZAZ" is the only enterprise in Ukraine that has a full cycle of passenger car production, which includes stamping, welding, painting, body equipment and car assembly. The main activities are large-scale (SKD) and small-unit (MKD) assembly of cars. The company has created and is constantly improving a qualitatively new modern high-tech production. The company manufactures cars, trucks and buses. Resumption of car production at the plant "ZAZ" began in 2020 and in 2021 the number of cars produced by him prevailed over the production of PJSC "Eurocar" – 3866 units against 3476 units (Fig.2).

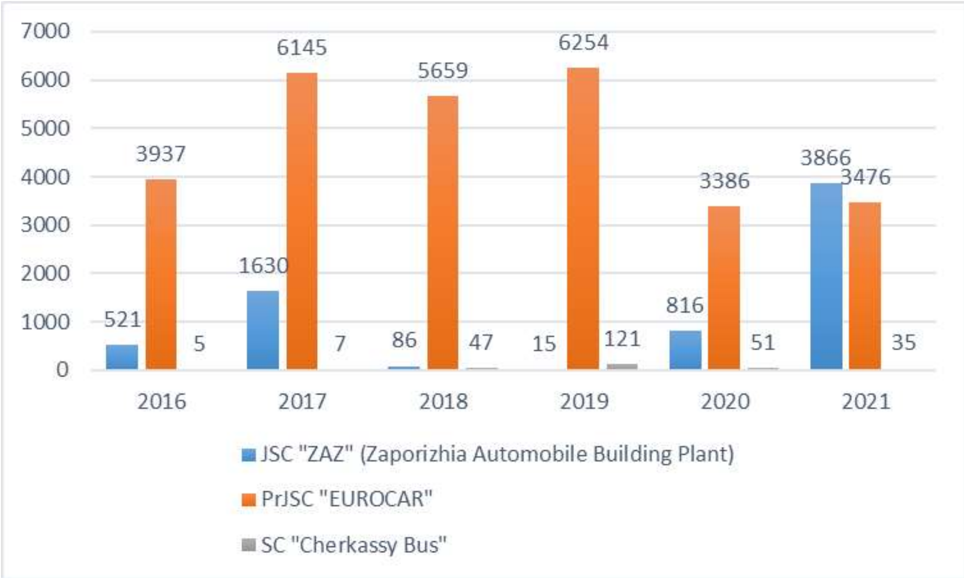


**Fig. 2. Production of cars by car manufacturers in Ukraine in 2016-2021**

During the crisis of 2014-2015, PrJSC “ZAZ” (still public at that time) proved to be insolvent. Lack of clear anti-crisis programs and mechanisms, insufficient attention to development issues had led to the deterioration of the enterprise. Push factors of the company's difficult situation were the fall of the domestic market of new cars, the loss of foreign markets, aggressive environment. Debt liabilities on foreign currency loans had increased many times due to the jump in the dollar. 2015-2017 were unprofitable for the company. The bankruptcy case of ZAZ PJSC was initiated in December 2018. The Commercial Court of Zaporizhia Region approved the register of creditors' claims in that case. As a result of writing off the debt of UAH 1.4 billion in 2018 by Prominvestbank, PJSC ZAZ received a net profit of UAH 1.068 billion.

In the framework of the initiated bankruptcy case, the Commercial Court of Zaporizhia region on March 11, 2019 ruled on the rehabilitation of PrJSC "ZAZ" (term - 6 months). The content of the approved rehabilitation plan was to bring the company out of bankruptcy as soon as possible, to preserve the infrastructure of production facilities as much as possible, to resume passenger car production activities. The main reasons that led to the introduction of financial rehabilitation at PJSC "ZAZ" were: difficult financial and economic condition of the enterprise; a sharp decline in the domestic market for new vehicles; loss of markets abroad; aggressive market environment and debt obligations on foreign currency loans, which had increased many times due to the sharp devaluation of the national currency.

During 2018, PrJSC ZAZ actually reduced production by 13 times - up to 131 units, mainly due to the almost complete cessation of production of cars (one car was produced against 1151 in 2017). In addition, the production of commercial vehicles decreased 5.6 times - to 85 units. In 2020, the Zaporozhye Automobile Plant again began mass production of cars, and his salvation was the signing of a contract with the Renault Group. Prior to the start of the project, PJSC ZAZ underwent a large-scale modernization to meet the international quality standards of the Renault Group. The plant has implemented the Alliance Production Way quality control system used by Renault Nissan Mitsubishi. The plant launched the production of the Renault Arkana crossover in 2020 - the line works on the principle of large-unit assembly of machine kits. In September 2020, for the first time since the beginning of the year, ZAZ produced 248 cars, in total for 2020 - 816 cars and for 2021 - 3866 (Table 2).

**Table 2 - Structure of passenger car production by major manufacturers in Ukraine in 2016-2021***

| | Years | | | | | | 2021/2016 | |
|---|---|---|---|---|---|---|---|---|
| | **2016** | **2017** | **2018** | **2019** | **2020** | **2021** | **+/-** | **%** |
| JSC "ZAZ" (Zaporizhia Automobile Building Plant) | 521 | 1630 | 86 | 15 | 816 | 3866 | 3345 | 642,0% |
| *Share in total, %* | *11,7%* | *20,9%* | *1,5%* | *0,2%* | *19,2%* | *52,4%* | *40,7%* | - |
| PrJSC "EUROCAR" | 3937 | 6145 | 5659 | 6254 | 3386 | 3476 | -461 | -11,7% |
| *Share in total, %* | *88,2%* | *79,0%* | *97,7%* | *97,9%* | *79,6%* | *47,1%* | *-41,1%* | - |
| PJSC "Cherkassy Bus" | 5 | 7 | 47 | 121 | 51 | 35 | 30 | 600,0% |
| *Share in total, %* | *0,1%* | *0,1%* | *0,8%* | *1,9%* | *1,2%* | *0,5%* | *0,4%* | - |
| **TOTAL** | 4463 | 7782 | 5792 | 6390 | 4253 | 7377 | 2914 | 65,3% |

* Retrieved from: [3]

Another powerful company, engaged in the production of passenger cars in Ukraine - PrJSC “Eurocar”. This company carries out full-scale production of cars and combines the main production processes of welding, body painting and installation. Production capacity is designed to produce 100 thousand cars a year, and allows to increase the level of car production localization with further prospects for export orientation. The total investment for all years of the company's existence was USD 250 million. The company's share in car production in 2016 was 88.2%, but by 2021 it decreased to 47.1%, which is due to the intensification of car production at the plant "ZAZ" (table 2.4).

PrJSC "Eurocar" has the following flexible competitive advantages, which were identified at the stage of formation and received further development:

- production and sale of Skoda cars and other brands of the Volkswagen Group;
- low labor costs of workers and employees of the enterprise, with their high qualifications;
- integrated system of flexible enterprise management in accordance with international standards ISO 9001: 2008 and certification for compliance with OHSAS 18001: 2007 standards;
- highly integrated channels and points of sale of manufactured cars throughout Ukraine through the group "Atoll Holding", which includes the company;
- flexible production capacity of the plant is 80 thousand cars per year (large assembly - 30 thousand cars, small assembly - 50 thousand cars per year) with high-capacity development and high adaptation to fluctuations in customer demand;
- flexibility of the production process is provided by modern technology, including modern equipment and lines "Transsystem" (Poland), "Hropinska Mechanical Engineering" (Czech Republic), "Eisenmann" (Germany) and other

leaders in the manufacture of equipment for car production, as well as automated control at all stages production operations;

- railway terminal of PJSC "Eurocar" allows to provide transport services for the European Union, CIS countries and provides flexibility of external logistics processes (the plant is located two kilometers from the border with Hungary, Slovakia and close to Solomonovo Technopark, which reduces costs for delivery by machine and increase performance on emerging product sales needs);

- high integration with Solomonovo Technopark allows to master the production of new product models with minimal costs and to ensure the sustainability of existing competitive advantages and the development of new ones. Constant attention to the competitive advantages of PJSC "Eurocar" allowed to reach new levels of competition in the domestic market.

As of 2021, the entire model range of ŠKODA cars was being produced, but due to the lack of large markets, the company's capacity is used by only up to 4-5%.

It should be noted that the automotive industry of Ukraine is represented not only by car assembly companies, but also by companies producing components and parts for vehicles. This segment generates 7.7% of the value added of the machine-building industry of Ukraine. In 2020, a total of 321 business entities were functioning there with the number of employees over 51 thousand personals. Sales in the segment in 2020 amounted to USD 512 million, while exports - USD 1 297 million, or 254% of production. The excess of exports over sales is due to the fact that most companies work on the scheme of production on tolling raw materials. Accordingly, the volume of sales reflects only the cost of services provided, while exports - the full cost of production. The segment is characterized by an average level of value added in production (33.0% in 2020), with a tendency to decrease in recent years (from 47.6% to 33.0% in 2016-2020). This is due to the increasing importance of companies in the production of automotive cables, which actually carry out toll processing of imported raw materials or components. The main element in the production of components and parts for vehicles is electrical and electronic equipment for vehicles (78%).

Enterprises in this segment are concentrated in almost all oblasts, the largest of which are Lviv, Zakarpattia and Volyn oblasts, which together account for about half of the production volumes and employees of the industry (Table 3).

The largest companies in this segment are subsidiaries of multinational corporations: Yazaki Ukraine LLC, Leoni Waring Systems UA GmbH LLC, Kromberg & Schubert Ukraine LU LLC, SE Bordnetze-Ukraine LLC, Fujikura Automotive Ukraine Lviv LLC, Kostal Ukraine LLC and GENTHERM Ukraine LLC, etc. The majority of foreign automotive manufacturers are concentrated in Western Ukraine, which is primarily due to its logistical proximity to end users. At the end of 2021 there were 22 global and regional manufacturers of car parts in Ukraine. About 50,000 jobs have been created at these enterprises, with a total investment of € 800 million in the sector. Ukraine has been and is interesting for the production of car parts. Ukraine has a developed infrastructure, there are free production sites and industrial parks, available and competitive skilled labor, a competitive level of operating costs.

**Table 3 - The structure of income and employment in the automotive industry of Ukraine by region in 2016-2020***

| Regions | Share in income, % | | | | | 2020/ 2016, % | Proportion of employed, % | | | | | 2020/ 2016, % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2020 | 2019 | 2018 | 2017 | 2016 | | 2020 | 2019 | 2018 | 2017 | 2016 | |
| Cherkasy Oblast | 1,2 | 0,9 | 1,0 | 0,7 | 0,6 | 0,7 | 0,6 | 0,6 | 0,5 | 0,5 | 0,4 | 0,2 |
| Chernihiv Oblast | 3,4 | 3,8 | 5,6 | 4,9 | 3,7 | -9,7 | 2,3 | 3,1 | 3,3 | 3,3 | 2,9 | -0,6 |
| Chernivtsi Oblast | 1,0 | 1,4 | 1,0 | 0,5 | 0,0 | 2010 | 2,6 | 3,0 | 2,5 | 1,2 | 0,0 | 2,6 |
| Dnipropetrovsk Oblast | 1,2 | 5,0 | 4,7 | 2,1 | 3,4 | -63,5 | 1,0 | 1,7 | 1,5 | 1,4 | 1,5 | -0,5 |
| Donetsk Oblast | 0,3 | 0,3 | 0,5 | 0,6 | 0,8 | -64,2 | 0,3 | 0,3 | 0,3 | 0,3 | 0,6 | -0,2 |
| Ivano-Frankivsk Oblast | 2,5 | 2,5 | 2,3 | 2,8 | 2,4 | 3,6 | 7,2 | 7,0 | 5,5 | 6,9 | 6,2 | 1,0 |
| Kharkiv Oblast | 0,7 | 0,6 | 0,8 | 0,8 | 1,2 | -44,9 | 0,6 | 0,7 | 0,7 | 0,8 | 0,8 | -0,2 |
| Kherson Oblast | 0,0 | 0,1 | 0,3 | 0,6 | 0,9 | -97,6 | 0,1 | 0,3 | 0,6 | 0,7 | 0,7 | -0,7 |
| Khmelnytskyi Oblast | 1,0 | 1,0 | 1,2 | 1,3 | 1,5 | -32,8 | 2,5 | 2,4 | 2,5 | 2,7 | 2,9 | -0,4 |
| **Kyiv Oblast** | **12,6** | **9,5** | **8,9** | **8,9** | **7,4** | **69,8** | **3,2** | **3,0** | **3,3** | **3,2** | **3,4** | **-0,2** |
| Kyiv City | 7,1 | 5,9 | 4,8 | 6,8 | 5,4 | 32,6 | 2,2 | 2,0 | 1,9 | 1,8 | 1,3 | 0,9 |
| Kirovohrad Oblast | 0,1 | 0,1 | 0,3 | 0,3 | 0,4 | -67,9 | 0,2 | 0,3 | 0,3 | 0,3 | 0,4 | -0,2 |
| Luhansk Oblast | 0,1 | 0,1 | 0,1 | 0,2 | 0,2 | -11,6 | 0,3 | 0,2 | 0,2 | 0,2 | 0,2 | 0,1 |
| **Lviv Oblast** | **19,3** | **20,3** | **14,1** | **12,7** | **13,2** | **46,9** | **22,3** | **21,8** | **22,7** | **22,8** | **22,9** | **-0,7** |
| Mykolaiv Oblast | 0,0 | 0,0 | 0,0 | 0,0 | 0,1 | -63,1 | 0,0 | 0,1 | 0,1 | 0,1 | 0,1 | 0,0 |
| Odessa Oblast | 1,6 | 1,0 | 1,3 | 2,5 | 2,2 | -28,3 | 0,6 | 0,5 | 0,5 | 0,5 | 0,4 | 0,2 |
| Poltava Oblast | 2,7 | 2,9 | 4,3 | 6,1 | 5,2 | -49,1 | 2,3 | 2,5 | 3,1 | 3,3 | 3,7 | -1,5 |
| Rivne Oblast | 0,4 | 0,3 | 0,4 | 0,5 | 0,5 | -32,2 | 0,2 | 0,2 | 0,2 | 0,3 | 0,3 | -0,1 |
| Sumy Oblast | 0,4 | 0,4 | 0,4 | 0,4 | 0,5 | -17,7 | 0,3 | 0,3 | 0,3 | 0,3 | 0,3 | 0,0 |
| Ternopil Oblast | 7,6 | 6,0 | 5,5 | 4,7 | 4,4 | 73,6 | 13,8 | 11,9 | 10,3 | 9,1 | 9,4 | 4,4 |
| Vinnytsia Oblast | 2,1 | 2,1 | 1,8 | 0,7 | 0,8 | 173,6 | 4,2 | 3,9 | 3,2 | 1,1 | 1,0 | 3,2 |
| **Volyn Oblast** | **10,4** | **8,9** | **8,5** | **8,4** | **10,2** | **1,8** | **11,5** | **11,2** | **11,0** | **13,1** | **13,4** | **-1,9** |
| **Zakarpattia Oblast (Transcarpathia)** | **18,1** | **19,9** | **25,7** | **26,7** | **28,1** | **-35,3** | **12,5** | **13,7** | **15,3** | **16,2** | **18,9** | **-6,4** |
| Zaporizhzhia Oblast | 2,7 | 3,0 | 2,6 | 3,9 | 5,2 | -47,4 | 2,7 | 2,8 | 3,3 | 4,7 | 5,1 | -2,4 |
| Zhytomyr Oblast | 3,4 | 4,0 | 3,6 | 2,8 | 1,9 | 82,5 | 6,4 | 6,6 | 7,1 | 5,3 | 3,1 | 3,3 |
| **Ukraine** | **100,0** | **100,0** | **100,0** | **100,0** | **100,0** | | **100,0** | **100,0** | **100,0** | **100,0** | **100,0** | |

* Retrieved from: [3]

Figures 3-4 present information on the allocation of component manufacturers by regions of Ukraine in 2016 and 2020.

In figures 3-4, number of manufacturers in each region is highlighted in yellow, revenue (turnover) is in red and number of employees is in blue. A comparison of the data allows to conclude that there is a significant increase in the number of officially registered producers in Kyiv (from 34 to 57, i.e., more than 23 companies), which led to a doubling of revenue during this period (from 28,5 to 64,8 million USD) and an increase in the number of employees (from 557 to 1133 people).

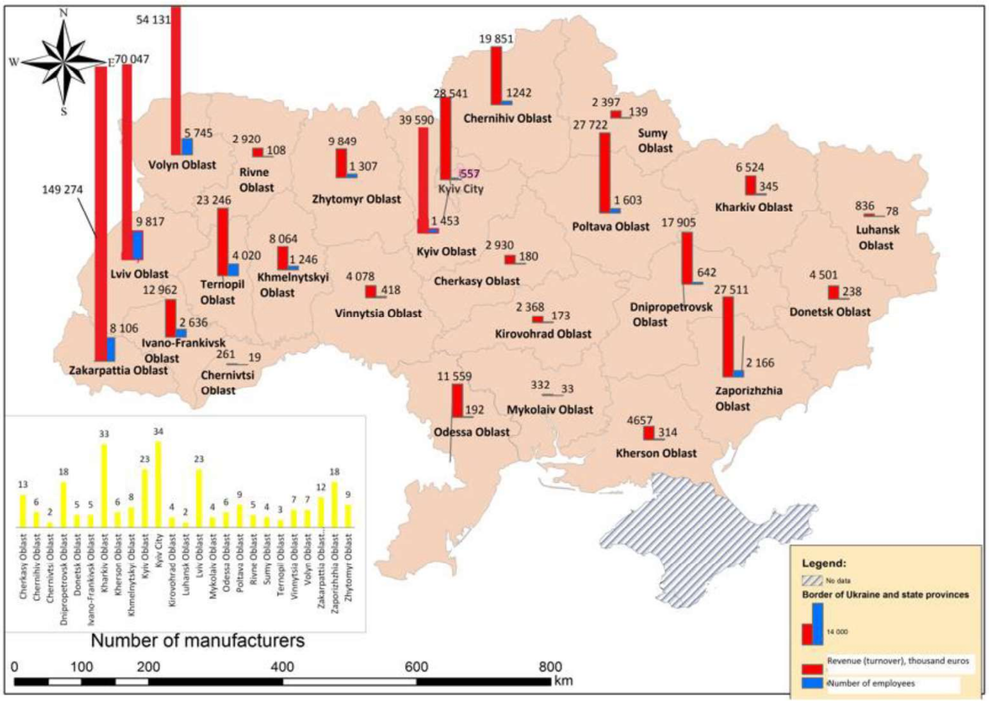


**Fig. 3. Allocation of car component manufacturers by regions of Ukraine in 2016.**

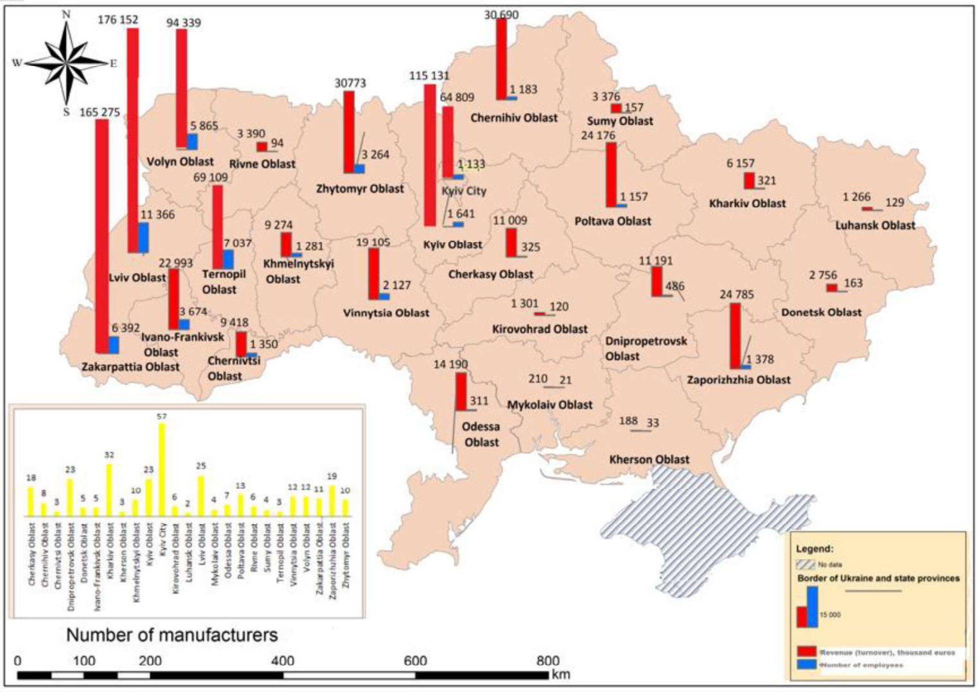


**Fig. 4. Allocation of car component manufacturers by regions of Ukraine in 2020.**

**Conclusions and prospects for further research.** Proximity to the border with the EU, cheap labor and sufficient raw materials make Western oblasts of Ukraine attractive to partners of European auto giants. In Ukraine, small parts are made for almost all European cars, including premium brands. These are mostly parts that require a lot of manual work, such as laying cable networks or sewing car seats. That's why Zakarpattia (Transcarpathia), Lviv and Volyn regions are the most attractive for production capacity placement and the volume of revenue turnover and number of employees there are bigger compare to other regions.

Although there is currently no automotive cluster in Ukraine, there are prerequisites for its creation in the Transcarpathian region on the basis of PJSC "Eurocar", which according to the integrated assessment has the highest innovation and investment potential among Ukrainian automakers.

Prospects for the creation of such a cluster in the Transcarpathian region were discussed in May 2018 at the Round Table, organized by the Federation of Employers of Ukraine and Eurocar with the assistance of the German-Ukrainian Chamber of Commerce. The participants of the meeting noted that the precondition for the cluster development in Transcarpathia could be the already formed pool of large car players - Eurocar, Jabil Circuit, Yazaki, Grocklin-Karpaty, Ungweier, Tochprilad, Flex, Fischer, Forschner, Gentherm Incorporated. Currently, a large number of companies operating in the Transcarpathian region produce products for the automotive industry. Therefore, the region in practice is a center of cluster initiative and a pioneer in the development of the cluster of the automotive industry and other high-precision industries. Thus, the further scientific investigations may focus on opportunities for creating an automotive cluster in Ukraine in collaboration with leading European partners. Taking into account the instability of oil product markets, the existence of the need to increase the level of environmental friendliness, there is a need to focus attention on the production of electric vehicles as well.

## REFERENCES

1. Shevchenko I. Yu. (2019) Rehuliuvannia rozvytku avtomobilebuduvannia Ukrainy: monohrafiia (Regulation of automobile development of Ukraine: monograph). Kharkiv: KhNADU. 556 p.
2. Savelyev Y., Kuryliak V., Darvidou K., Lyzun M., Lishchynskyy I. (2021) Transformation of Ukrainian Automotive Industry in the Context of Electromobility: Applying the Experience of Visegrad States. *IV International Scientific Congress "Society of Ambient Intelligence – 2021" (ISCSAI 2021)*. SHS Web Conf., Volume 100. https://doi.org/10.1051/shsconf/202110001018
3. Ukrainian Motor Vehicle Manufactures Association. Production statistic. URL: https://ukrautoprom.com.ua/ (last accessed: 26.05.2022)
4. International Organization of Motor Vehicle Manufacturers. Production statistic. https://www.oica.net/production-statistics/ (last accessed: 26.05.2022)