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**Management and Finances  
of Public and Private Sector Entities  
under New Management Conditions.  
Ukraine – Poland – the European Union**

Zeszyty Naukowe  
Wyższej Szkoły Bankowej w Poznaniu  
2020, t. 88, nr 1

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**Zarządzanie i finanse podmiotów  
sektora publicznego i prywatnego  
w nowych warunkach gospodarowania.  
Ukraina – Polska – Unia Europejska**

redakcja naukowa  
Wiesława Caputa



Wydawnictwo  
Wyższej Szkoły Bankowej w Poznaniu

Poznań 2020

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edited by  
Wiesława Caputa



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Poznan 2020

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# Introduction

The modern economy is facing new challenges, not only as a result of globalization and digitization, but also those associated with the spread of the COVID-19 pandemic. Among them are problems of maintaining existing supply chains, consisting of entities operating in different countries. These problems may disrupt the development of international trade and make it difficult for various sectors of the economy to maintain of the current development capacity and the same level of resource use.

These new challenges have to be addressed not only by enterprises but also by local government units, cultural institutions and health care institutions. The concept of corporate social responsibility (CSR) has taken on a new significance, because the extent to which it is implemented by organisations determines their market perception, and, consequently, their market value.

The current issue focuses on the problems presented above, which are illustrated with examples from Poland and Ukraine, which are often analysed in the context of developing international relations, especially with countries of the European Union.

In their article entitled *The Influence of Foreign Trade with EU Countries on Ukraine's Economic Growth* Juliia Poliakova and Oksana Shaida present the characteristics of trade in goods manufactured in Ukraine with EU countries and its impact on the country's economic growth. The analysis of trends, dynamics and structure of domestic exports of goods to EU countries reveals that the EU Member States are among Ukraine's largest trading partners, and export revenues have the biggest positive impact on the country's GDP. The authors propose a number of organizational and economic activities to support domestic producers in their export activities.

In the following article entitled *Problems of Developing the Export Potential of Ukrainian Milk Processing Products* Svitlana Ishchuk and Olena Liahovska analyse the dynamics of raw milk production in Ukraine from the perspective

of enterprises and households, and identify the following problems: (1) the insufficient capacity and low quality of raw milk for industrial milk processing, (2) the presence of a shadow economy segment and a high degree of adulteration in the domestic market of dairy products, (3) limited Ukrainian dairy exports, accompanied by the growth in imports.

The wood industry is also highly export-oriented. Lyubomyr Sozansky and Nataliya Ryvak in their article entitled *A Comparative Assessment of Timber Resources for the Woodworking Industry of Ukraine and EU Countries* evaluate the timber resources for the wood industry in Ukraine and EU countries and find that Ukraine is not fully exploiting its potential to ensure a dynamic development of the wood industry. The authors argue that the growing share of fuelwood in roundwood production in Ukraine poses a threat to the environmental and national security as well as harming the prospects of the woodworking industry. Therefore, the creation of effective economic and legal instruments for the development of forestry and the woodworking industry is extremely important for strengthening the processes of economic integration in the context of the moratorium on timber exports from Ukraine.

Land is one of the most important resources of any country. Because they are limited, they should be used rationally. In the article entitled *Trends in the Use of Land Resources of Amalgamated Territorial Communities in the Lviv Region* Ivanna Myshchyshyn provides a comparison between the dynamics and structure of agricultural land use in the Lviv region and in Poland's Podkarpackie province. The author believes it is necessary to undertake multidimensional activities to ensure a more rational use of land resources, especially in the Lviv region.

The value of a region, enterprise or institution is related to the market perception of resources such an entity has access to. This value depends not only on the evaluation of its assets, but also on the method of resource management, which should take into account the interests of a wide range of stakeholders, including the society as a whole. In his article entitled *The Impact of Applying the Principles of Corporate Social Responsibility on the Market Value of Shares on the Warsaw Stock Exchange* Marcin Fuksiewicz asks whether CSR principles applied by some companies listed on the Warsaw Stock Exchange have an impact on their stock prices. The analysis does not yield a definite answer. Nevertheless, the author notes that investments in companies listed in the Respect Index generated rates of return almost eight times as high as investments in shares listed in WIG20, which may be an argument in favour of investing in shares of enterprises supporting CSR principles. According to the author, investors can also look for investment opportunities by exploiting stock market anomalies, such as momentum strategies.

Local government plays an important role in social and economic life. Julia Anna Klimek, in her article entitled *Determinants of Social Dysfunctions of Local*

*Government Units* highlights one of the many dysfunctions of local government, namely the social dysfunction. The author argues that the local community is essential for local government, particularly because its social structure, status and social roles shape the way local government units function. Hence, this work is complementary to the contemporary study on the determinants of social barriers in local government units.

In an article entitled *Optimization of the Working Capital of Industrial Corporations According to the Criteria of Economic Evaluation of Synergetic Development Effects: Models, Methods, Tools* Yaroslav Kudrya proposes theoretical and methodological principles of development for industrial corporations using the example of the machine-building sector. The author focuses on the application of synergy effects, which are seen as the most promising factor in terms of specific development of corporations and integrated corporate structures. He also proposes a method for estimating the economic effect of synergy for machine-building corporations, which is based on the analysis of additional income from an innovation project, taking into account the initial cost of fixed assets and the cost of the innovation project as a whole.

The COVID-19 pandemic has changed the way the cultural sector operates. In her article entitled *Activities of Cultural Institutions During the COVID-19 Pandemic: a Case Study* Martyna Musiał describes an initiative of the Polish Ministry of Culture and National Heritage to illustrate the functioning of these institutions in three Polish cities. She concludes by offering their services online, the institutions in question were able to successfully carry out their tasks and satisfy user needs.

The last article, entitled *A Hospital Management Model Based on Accreditation Standards* addresses aspects of managing health care units. Ewa Popławska presents a model of hospital management involving accreditation standards and analyses how it correlates with classic management functions. In addition to highlighting the role of accreditation standards in financing health services by the National Health Fund, she identifies weaknesses of the hospital accreditation programme that require additional management measures. These suggestions are particularly important in the context of the further development of the pandemic.

Although the studies described in the articles do not fully exhaust the topics covered, they provide an overview of problems that may be of interest not only to scientists and students, but also to practitioners. They serve as a starting point for scientific discourse and justify the need for further research, especially given the impact of the COVID-19 pandemic on the economy and society.

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## **The Influence of Foreign Trade with EU Countries on Ukraine's Economic Growth**

**Abstract.** *The purpose of the article is to analyse special characteristics of Ukraine's foreign trade in goods with EU countries and identify how it affects the country's economic growth. Emphasis is placed on benefits for domestic exporters derived from the existence of the Deep and Comprehensive Free Trade Area. The author analyses trends, dynamics and structure of domestic commodity exports to EU countries in the face of global challenges. EU member states are found to be Ukraine's largest trading partners. Econometric analysis is used to measure the share of exports to the EU in total Ukrainian exports. The author uses Python scripts to measure the influence of exports and imports of goods between Ukraine and the EU on the country's GDP and finds that it is mainly affected by exports. A number of organisational and economic measures to support domestic manufacturers in terms of successful implementation of export deliveries are also proposed.*

**Keywords:** *export of goods, import of goods, Association Agreement between Ukraine and the EU, free trade area, foreign trade, customs and tariff policy*

### **1. Formulation of the problem**

On January 1, 2016, the Deep and Comprehensive Free Trade Area of Ukraine with the EU began to function in the mode of implementation of the provisions of the Association Agreement between Ukraine and the EU. During this period, a number of positive changes in mutual trade could be observed: the European market has become a key one for Ukrainian exports of goods; the number of companies exporting goods to the EU Member States has increased significantly; expanding potential opportunities to join European markets is considered a priority for the development of foreign economic policy.

It should also be noted that there have been radical changes in the field of customs and tariff regulation, in particular in the direction of gradual reduction of import duty rates, administration of determining the country of origin of goods, introduction of a mechanism of duty-free tariff quotas. Steps to liberalize foreign trade and the practical implementation of policy documents are carried out synchronously by both parties. Thus, in 2014, the European party began to simplify the application of customs regimes for most Ukrainian goods by providing autonomous trade preferences, namely the abolition of import duties on some industrial goods, agricultural and food products. Since the establishment of the free trade area, Ukraine has also begun the process of abolishing import duties on certain goods from the EU, establishing duty-free tariff quotas and gradually reducing import duties on the so-called sensitive commodity groups during the transition period.

These measures has contributed to successful structural changes in mutual foreign trade, since 2016 the trend of trade has begun to grow steadily, domestic exporters have confirmed their focus on European markets by obtaining the status of authorized exporters, certification of products to established standards and so on. At the present stage, there is a need to develop a set of organisational and economic measures to support mutual trade in order to prevent a slowdown in the annual growth of Ukraine's foreign trade with EU member states.

## **2. Aims and methodology of the study**

The aim of the study is to identify the influence of Ukraine's foreign trade in goods with the EU member states on the country's economic growth. Achieving this goal involves the implementation of the following tasks: analysis of trends, dynamics and structure of domestic commodity exports to the EU countries in a dynamically changing environment; application of economic and mathematical tools to estimate the dependence of Ukraine's gross domestic product on exports of goods from Ukraine and imports of goods from the EU, as well as the influence of exports to the EU on total Ukrainian exports. The theoretical and methodological basis of the study are the postulates of modern scientific thought, works of domestic researchers on the problems of stimulation and development of export activities, strategic policy documents, analytical and scientific reports of official institutions.

## **3. Main results of the study**

Nowadays, the development of export activities of domestic economic entities is becoming relevant; at the same time, their presence in world markets for goods and services is associated with a number of threats that need to be taken into account. Among the most important global trends and events of the current stage

there are aspects of international and regional levels: politicization of international trade, strengthening of protectionism, rapid development of undocumented international trade, innovative trading platforms and financial technologies, further development of China's strategic Belt and Road Initiative, definition of the terms of trade between the UK and the EU after Brexit, ratification of a new tripartite trade agreement between Canada, the US and Mexico [Zviahin 2019].

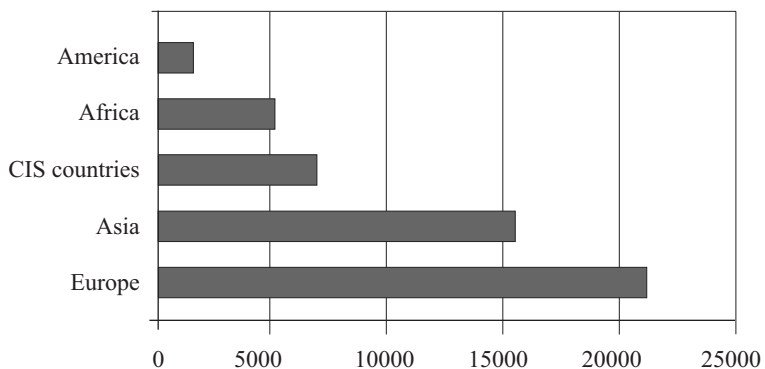
Challenges for Ukraine's foreign trade are considered by domestic scientists in terms of two groups: favourable (deepening Ukraine's integration into the global trade space, removing barriers in foreign markets, development of IT technologies, growth of e-commerce, implementation of the Association Agreement between Ukraine and the EU, increasing the number of international agreements in the field of trade) and unfavourable or threatening (suspension of industrial production in Donetsk and Luhansk regions, slowing of the dynamics of the world economy, increasing risks of cooperation with Ukrainian residents due to political and economic instability) [Deineko 2018: 144].

The total export of goods and services of Ukraine in 2019 amounted to 63.7 billion USD and increased by 11.2% compared to 2018, while 78.6% is accounted for by goods in the structure of this indicator. Export deliveries are characterized by a high level of geographical differentiation, the total number of partner countries exceeds 200, while 37.7% of the total volume of goods and services go to EU member states.

Globally, European countries account for 42.4% of exports of goods from Ukraine, Asian countries – 30.8%, Commonwealth of Independent States (CIS) – 13.5%, Africa – 9.9%, America – 2.9%, Australia and Oceania – 0.1% (Chart 1).

General exports of goods in 2019 amounted to 50.1 billion USD (increased by 5.8% compared to the previous period), and imports of goods amounted to 60.8

Chart 1. Exports of goods from Ukraine by continent in 2019 (million USD)

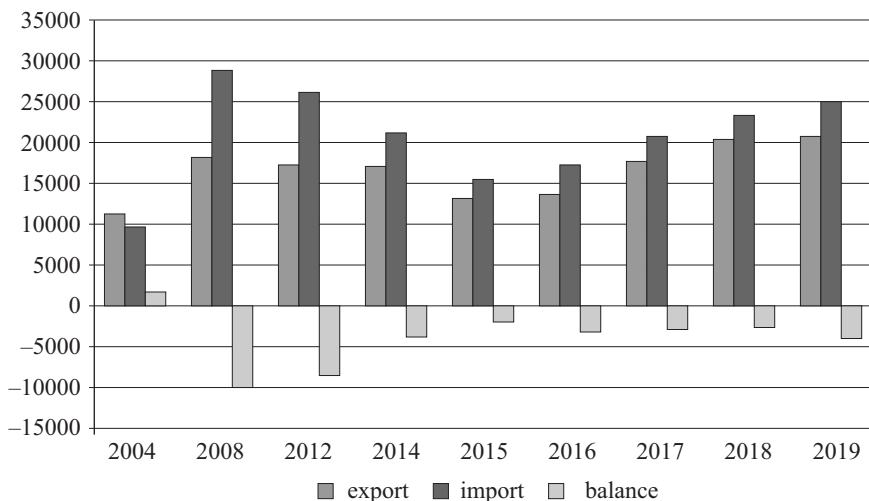


Source: based on Ukrainian statistical data for 2019.

billion USD. The structure of domestic exports for the period under study is as follows: agricultural products and food industry (44.2% of the total), metallurgical products (20.5%), mechanic engineering products (11.0%), mineral products (9.7%), chemical industry products (5.3%), wood and paper pulp (3.7%), various industrial goods (3.2%), light industry products (2.4%) (based on Ukrainian statistical data for 2019). It is possible to note a significant orientation of domestic exports to raw materials, which simultaneously demonstrates the dependence of exports on the influence of external factors and the situation on world commodity markets and is directly reflected in the volume of foreign exchange earnings of the country.

The EU member states are one of Ukraine's largest trading partners. The total exports of goods and services to the EU member states from Ukraine in 2019 amounted to 24.0 billion USD (goods – 20.8 billion USD), and the balance of trade in goods has remained negative for a long time (Chart 2). The Association Agreement between Ukraine and the EU provides for the Deep and Comprehensive Free Trade Area, which not only forms the institutional and legal basis for the movement of goods, services, etc., but also determines the areas of harmonization with the gradual entry of Ukraine's economy into the EU internal market. As noted, the free trade area, on the one hand, is an instrument of systemic reforms in trade and economic spheres, and on the other hand it will ensure the gradual integration of Ukraine's economy into the EU internal market [Kuzo et al. 2015: 24].

Chart 2. Exports, imports and the balance of foreign trade in goods of Ukraine with EU member states in 2004-2019



Source: based on Ukrainian statistical data for 2019.



In 2019, the share of these countries in domestic exports of goods was 41.4%, imports of goods – 41.1%, exports of services – 28.1%, imports of services – 54.6%. The share of European investments in the total volume of foreign direct investment in Ukraine as of January 1, 2019 was 78.9%. The growth of trade in goods between Ukraine and the EU, which resumed after 2016, is gradually showing signs of moderation, i.e. the growth rate is slowing down compared to other countries. According to experts, the shock caused by the launch of the Deep and Comprehensive Free Trade Area is likely to be offset by a number of non-tariff barriers.

According to the results of 2019, 15 regions of Ukraine showed an increase in exports of goods to the EU countries, the largest positive contribution being observed in Kyiv, Lviv, Cherkasy, Kirovohrad, Sumy, Vinnytsia and Chernihiv regions.

In exports of goods, the largest partners of Ukraine are Poland (15.8% of total exports to the EU), Italy (11.6%), Germany (11.4%), the Netherlands (8.9%), Hungary (7.5%), Spain (7.2%), and Romania (4.8%). Imports of goods include Germany (23.9% of total imports to the EU), Poland (16.4%), Italy (8.3%), France (6.6%), Hungary (4.9%), the Czech Republic (4.6%), and Lithuania (4.5%) (Table 1). Ukraine maintains a positive balance of foreign trade in goods with Belgium, Bulgaria, Spain, Italy, Cyprus, Latvia, Malta, the Netherlands, Portugal, Romania, Slovakia and Hungary.

Table 1. Ukraine's largest partner countries in exports and imports in goods from the EU member states in 2019

Export of goods			Import of goods		
Country	thousand USD	%	Country	thousand USD	%
Poland	3296,538.7	15.8	Germany	5991,518.9	23.9
Italy	2418,878.1	11.6	Poland	4102,572.3	16.4
Germany	2383,393.7	11.4	Italy	2074,744.4	8.3
Netherlands	1848,433.2	8.9	France	1652,790.6	6.6
Hungary	1562,810.3	7.5	Hungary	1241,628.8	4.9
Spain	1500,801.3	7.2	Czech Republic	1165,505.0	4.6
Romania	1005,645.8	4.8	Lithuania	1144,529.5	4.5

Source: based on Ukrainian statistical data for 2019.

The structure of exports of goods from Ukraine to the EU in 2019 was dominated by: products of the agro-industrial complex and food industry, products of the metallurgical complex and mechanical engineering, mineral products, wood and paper pulp, light industry products, various industrial goods and chemical products (Table 2). The TOP-15 products, the volume of which has increased in the current period, are maize, sunflower oil, rapeseed, oil cake, electrical power,

Table 2. The largest commodity groups in Ukraine's foreign trade with the EU countries in 2019

Code and name of goods	Export		Import	
	thousand USD	% of total volume	thousand USD	% of total volume
I. Live animals; products of animal origin	347,127.6	1.7	507,746.2	2.0
II. Products of plant origin	4480,044.4	21.6	579,986.8	2.3
III. Fats and oils of animal or vegetable origin	1544,502.7	7.4	68,899.9	0.3
IV. Ready-made food	943,107.3	4.5	1683,962.5	6.7
V. Mineral products	2697,635.9	13.0	2784,144.8	11.1
VI. Products of the chemical and allied industries	559,879.7	2.7	4384,673.2	17.5
VII. Polymeric materials, plastics and articles thereof	203,837.1	1.0	1682,650.3	6.7
IX. Wood and wood products	1004,968.9	4.8	151,883.7	0.6
XI. Textile materials and textile products	706,607.7	3.4	760,622.2	3.0
XV. Base metals and products thereof	3796,718.3	18.3	1325,238.7	5.3
XVI. Machines, equipment and mechanisms; electrical equipment	2825,048.7	13.6	5435,945.3	21.7
XVII. Land vehicles, aircrafts, floating vehicles	203,422.1	1.0	3366,689.5	13.5
XX. Various industrial goods	709,618.9	3.4	328,036.6	1.3

Source: based on Ukrainian statistical data for 2019.

barley, soybeans, soybean oil, nitrogen fertilizers, electric water heaters, furniture and furniture parts, rods, bars and beams of steel and hot rolled products, parts for railway locomotives, bottles and glass containers, turbojet engines.

According to the official statistics, export deliveries are actively developing within the framework of duty-free exports under tariff quotas. Thus, in 2019, domestic exporters used the opportunities of 32 of the 40 tariff quotas, 11 of which were used in full and 2 were used by more than 95%. 11 tariff quotas were fully used for maize, wheat, barley, honey, sugar, grape and apple juices, processed tomatoes, processed starch, butter, poultry and starch (based on European integration portal).

In the process of comparing the commodity structure of export and import with the EU countries with the general structure of export and import of Ukraine, domestic researchers found that for some goods with a lower degree of processing, the share of exports to the EU countries is higher than the average for all exports. At the same time, for certain goods with higher added value, the share of the EU countries is lower than the average. The exception is mechanical engi-

neering products. Thus, the European Union exports higher value-added products (e.g. pharmaceuticals, engineering). But in cases where domestic products are competitive in terms of price-quality ratio (including power engineering products), European partners are prone to imports of high-tech products [Romanenko et al. 2017: 74].

It is expedient to investigate how the general export opportunities of Ukraine are determined by the volumes of exported goods that domestic producers sell on the EU markets. In our research, we have built an econometric model of the dependence of Ukraine's total exports on exports to the EU countries. To build the model, time series of relevant indicators for the period 1996-2019 have been used. The linear regression model reflects the relationship between these indicators:

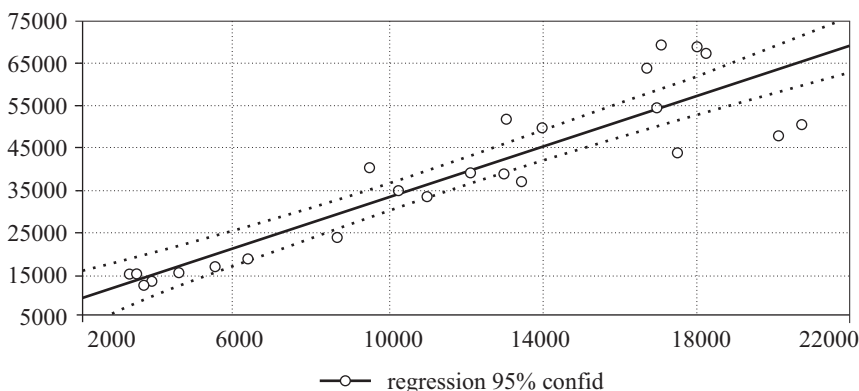
$$Y = 2624,7 + 2994X \tag{1}$$

where:

- $Y$  – total exports of Ukraine,
- $X$  – Ukraine's exports to EU countries.

The intensity of the relationship between the variables included in the model is measured by the correlation coefficient. For our model, its value is 0.9, which indicates that there is a close direct relationship between the variables. The coefficient of determination shows that 82% of the dependent variable is explained by the influence of the independent variables. Checking the reliability of the regression model and the correlation coefficient based on Fisher's criterion gives reasons to conclude about the adequacy of the model, as the observed value of F-statistics 100.87 is greater than the table value at 0.05. The independent variables included in the model are statistically significant. Thus, we can say that the growth of exports to the EU by 1 million USD will increase Ukrainian exports by

Chart 3. Dependence of Ukraine's total exports on exports to the EU

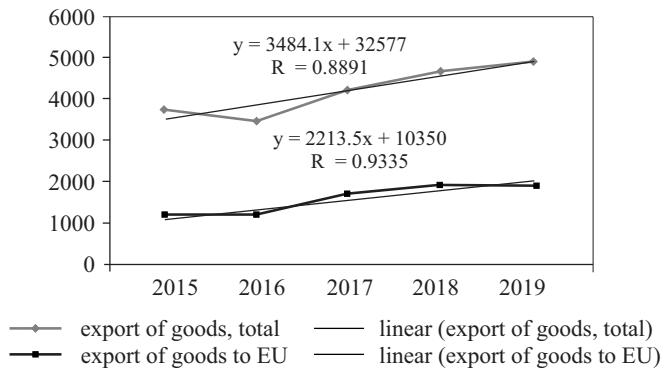


Source: own elaboration.

2.99 million USD (Chart 3). Therefore, Ukraine should strengthen and reinforce its chosen course on the orientation of domestic exports to the EU market.

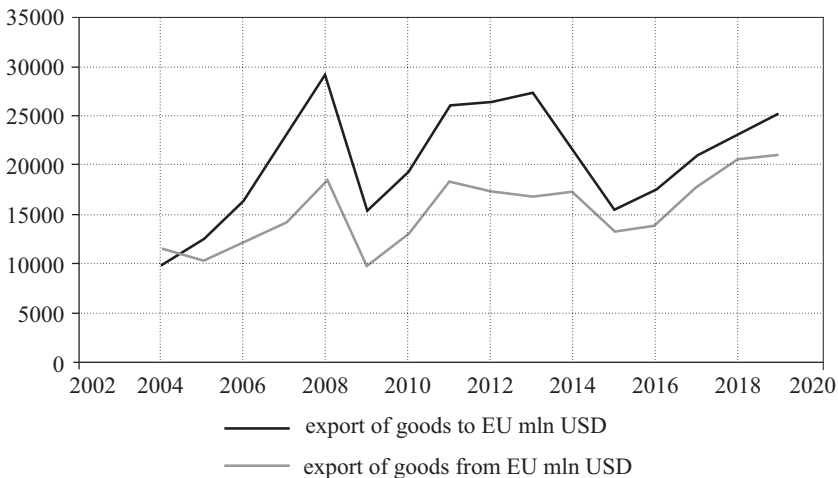
We can also note that in the period after 2015, when, firstly, the Ukrainian economy managed to neutralize the negative impact of the foreign policy factor of the military conflict with Russia and, secondly, the necessary institutional opportunities to intensify foreign trade with the EU emerged, exports in general and exports to the EU show in the dynamics a clear linear growth. This can be confirmed by the corresponding trend linear models we have built (Chart 4).

Chart 4. Time series of indicators of total exports of Ukraine and exports to the EU and the corresponding trend models



Source: own elaboration.

Chart 5. Trends in the dynamics of exports of goods from Ukraine to the EU and imports of goods to Ukraine from the EU in 2004-2019



Source: own elaboration.

We will also consider the results of the formation of a linear regression for estimating the dependence of Ukraine's gross domestic product on exports of goods from Ukraine and imports of goods from the EU to Ukraine, obtained using Python programming and the Sklearn library. For the study, we have selected the official statistics for the period 2004-2019, a graphical representation of which is presented below (Chart 5).

As a result of the study, it has been found that there is a significant correlation (0.83) between the input data (exports of goods from Ukraine to the EU and imports of goods from the EU to Ukraine). It is also obvious that the main positive impact on the gross domestic product is created by exports (both export coefficients are positive and quite large,  $\approx 1$ ), in contrast to imports, the impact of which is not so significant compared to exports (Table 3).

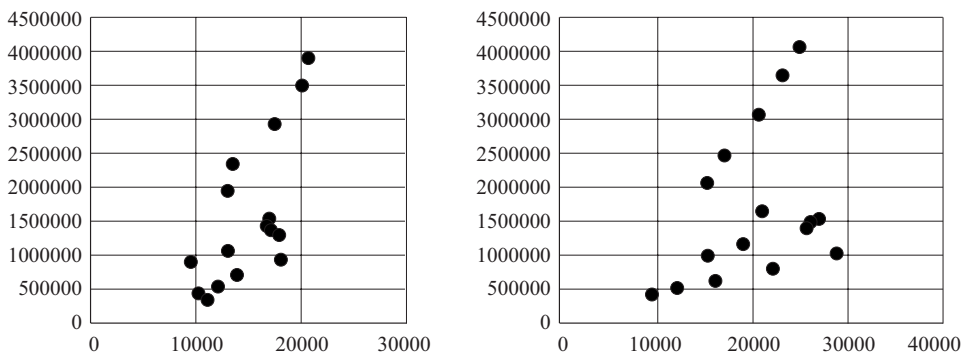
Table 3. The results of estimating the dependence of Ukraine's gross domestic product on exports of goods from Ukraine and imports of goods from the EU to Ukraine

Title	Exports of goods to the EU	Imports of goods from the EU
Correlation of input variables with the GDP	0.71	0.36
Simple linear regression	1.33	-0.75
Linear regression with regularization	1.04	-0.48
Correlation of exports and imports with each other		0.83

Source: own elaboration.

The graphical representation of the correlation dependence of Ukraine's gross domestic product on exports of goods from Ukraine to the EU and imports of goods from the EU to Ukraine illustrates the estimation results (Chart 6).

Chart 6. Dependence of Ukraine's GDP on exports to the EU



Source: own elaboration.

Thus, the intensification of mutual trade between Ukraine and the EU member states within the framework of the Deep and Comprehensive Free Trade Area has a number of advantages, including: stimulating the country's economic growth, positive impact on macroeconomic indicators, easier access to the European market for domestic producers, transparent competition policy, improving the quality and safety of domestic products, popularisation of Ukrainian brands in Europe and increasing demand for them, qualitative structural changes in Ukraine's foreign trade.

In the conditions of the implementation of the Association Agreement between Ukraine and the EU, the abolition of customs tariffs in the creation of a free trade zone with the EU, the loss of certain markets, the need to meet high technical standards, it is important for Ukraine to develop a set of measures to support domestic manufacturers. Among the priority measures are the following: removal of obstacles to export development; development of information and consulting support for export activities; raising awareness of foreign economic activity by business entities; intensification of exports on an innovative basis to increase the share of high-tech exports; involvement of domestic producers in international chains of added value; implementation of agreements governing the development of trade relations.

#### **4. Conclusions**

Since the beginning of the Deep and Comprehensive Free Trade Area between Ukraine and the EU, there have been positive developments in mutual trade between the countries and the liberalization of customs and tariff regulation. EU member states remain one of Ukraine's largest trading partners. The share of EU countries in domestic exports of goods in 2019 is 41.4%, imports of goods – 41.1%, exports of services – 28.1%, imports of services – 54.6%. The balance of trade in goods has remained negative for a long time. However, the growth of trade in goods between Ukraine and the EU, starting after 2016, is gradually showing signs of moderation compared to other countries.

The structure of exports of goods from Ukraine to the EU is dominated by products of the agro-industrial complex and food industry, products of the metallurgical complex and mechanical engineering, mineral products, wood and pulp, light industry products, various industrial goods and chemical products. In exports of goods, Ukraine's largest partners are Poland, Italy, Germany, the Netherlands, Hungary, Spain and Romania; in imports of goods the counterparts are Germany, Poland, Italy, France, Hungary, the Czech Republic and Lithuania.

As a result of programming in Python using the Sklearn library, it is established that the main positive impact on the gross domestic product of Ukraine is

created by the export of goods to the EU compared to imports from the EU, which is a stimulus for economic growth and has a positive effect on macroeconomic indicators. Econometric analysis has confirmed the positive impact of Ukraine's exports to the EU on the overall export opportunities of the domestic economy. In order to prevent a slowdown in Ukraine's foreign trade with the EU member states, it is proposed to identify and eliminate obstacles to the development of exports; advancement of information and consulting support for exporters; implementation of measures to increase the level of manufacturability and technological effectiveness of exports, institutional and organisational support of the existing trade agreements.

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## Wpływ handlu zagranicznego z krajami UE na wzrost gospodarczy Ukrainy

**Streszczenie.** W artykule przedstawiono specyfikę handlu zagranicznego towarami Ukrainy z krajami UE oraz jego wpływ na wzrost gospodarczy kraju. Nacisk położono na korzyści dla krajowych eksporterów, które powstają w strefie wolnego handlu. Przeprowadzono analizę tendencji, dynamiki i struktury eksportu towarów krajowych do krajów UE w warunkach globalnych wyzwań. Udowodniono, że państwa członkowskie UE należą do największych partnerów handlowych Ukrainy. Dokonując analizy ekonometrycznej, zbadano wpływ eksportu do UE na ogólny eksport z Ukra-

*iny. Za pomocą skryptów napisanych w języku Python dokonano oceny wpływu eksportu i importu towarów między Ukrainą a UE na produkt krajowy brutto. Ustalono, że główny wpływ na produkt krajowy brutto Ukrainy ma eksport. Zaproponowano szereg środków organizacyjnych i ekonomicznych w celu wsparcia producentów krajowych w realizacji dostaw eksportowych.*

**Słowa kluczowe:** eksport towarów, import towarów, Układ o stowarzyszeniu między Ukrainą a UE, strefa wolnego handlu, handel zagraniczny, polityka celna i taryfowa



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# Problems of Developing the Export Potential of Ukrainian Milk Processing Products

**Abstract.** *The production and industrial processing of milk is an important part of the economies of Eastern European countries, in particular Ukraine, which is one of the leading exporters of dairy products. The author analyses the dynamics of raw milk production in Ukraine from the perspective of enterprises and households and conducts a comparative assessment of the main kinds of industrial production of dairy products. Another aspect explored in the article is how the structure of Ukrainian exports of dairy products has changed in terms of commodities and geographical location. The author identifies the main problems of the export capacity of dairy processing enterprises taking into account the availability of raw milk.*

**Keywords:** *raw milk production, industrial processing, dairy products, regions, export, import*

## 1. Formulation of the problem

The production of milk and dairy products is a crucial part of national food industry, which makes 14%. Milk and dairy products, which in big quantity contain unique micronutrients (first of all proteins), are both important components of healthy diet and at the same time irreplaceable ingredients when producing a great deal of food industry products. However, unfortunately, Ukraine partly lost its capacity of milk producing due to inconsistent reforming of agriculture “early nineties,” in particular in a way of elimination of big agribusinesses. During 2014-2019 the capacity of raw milk decreased by 15.68%. As a result, during this period Ukraine fell five places to the 19<sup>th</sup> position in 2019 in the world ranking among milk producers.

Owing to the milk capacity reduction dairy products export drawdown was possible, in particular butter (by 40% in 2019) and caseins (by 28%), according to export capacity Ukraine ranks in top 5 at the world market. These negative tendencies continued in 2020 – which means that total dairy products export in Ukraine reduced by 26%.

## **2. Literature review**

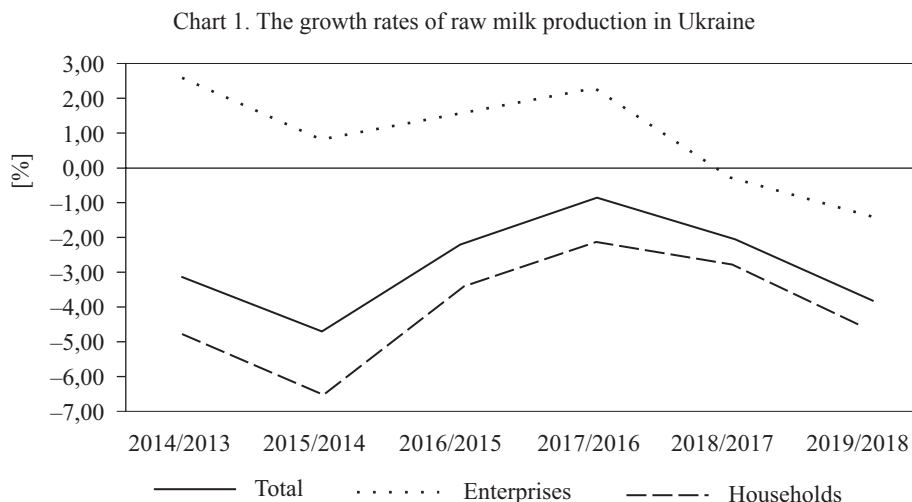
Taking in account high social milk production and process importance, it is an object of wide-range researches in particular key tendencies of functioning of the Intra-European Union trade of milk and dairy products are shown in [Bórawski, Dunn, Harper & Pawlewicz 2019]. Problems of an agricultural potential in Central and Eastern Europe, in Poland in particular are explored [Kowalczyk & Sobiecki 2019]. The survey of current state and perspectives of dairy products development in Ukraine [Keranchuk 2015: 408-413], and today's problems of dairy business functioning are carried out in [Stepanchuk & Jefisjko 2017: 9-10]. On the other hand, questions of complex assessment of raw milk and its industrial processing need to be solved.

All things considered, the aim of this article is defining the problems connected with the increasing milk export capacity in Ukraine.

## **3. Main results of the study**

The negative trend of collecting raw milk in Ukraine is connected with the domination of households with 71.94% (in comparison with 77.53% in 2013), which have reduced their production by 21.76% for the last six years. At the same time, agricultural enterprises, which increased their milk production capacity (in total by 5.23%) since 2018 they show the decreasing of this rate (Chart 1).

One of the key reasons which caused negative dynamics of milk production in Ukraine is fewer livestock during the analyzed period by 26.05% (by 5.88% in 2019), in particular by 21.77% (6.31%) – at enterprises and by 27.33% (5.75%) – at the household level. As we can see, despite more intensive reducing of livestock at the enterprises in 2019, pace of decline in milk production was by 3.26% smaller than at the household level. The reason for this situation is much higher (with a tendency to further increase) level of efficiency functioning of agricultural enterprises, as evidenced by predominance of milk yields in this sector, compared with households, 1.36 times in 2018 (against 1.12 times in 1990). However, in the raw milk production structure in Ukraine (according to household types) enterprises prevail (with proportion > 50%) only in three regions: Kyiv, Poltava and Cherkasy.



Source: based on data from SSSU 2019a, 2019b.

In Ukraine, a relatively small share of raw milk (18.42% in 2019 against 12.96% in 2016 and 16.32% in 2013) is subject to industrial processing. Low performance of this indicator is the result of prevailing of those enterprises in the structure production, which are unable to supply appropriate quality of raw milk. In most cases they produce second-class milk, where proportion in overall quality is constantly over 83%. Instead, the structure of raw milk production on enterprises is diversified: in 2019, “Extra” milk was occupied 27.2% (against 9.2% in 2014), the highest grade – 35.9%, and the first – 32.3%.

In contrast to the production of raw milk, the trends of its industrial processing since 2017 have shown a generally positive trend (Table 1). However, during 2018-2019 there was a decrease in butter production (a total of 17.35%), and in 2019 – also milk (various types) and cheese. Significantly production of other dairy products (yogurt, kefir, sour cream, casein, etc.) has increased.

Table 1. Industrial production growth rates of milk and dairy products in Ukraine (%)

Product	2014/2013	2015/2014	2016/2015	2017/2016	2018/2017	2019/2018	2019/2013
Milk	15,43	-8,89	-40,99	69,78	0,18	-4,00	1,33
Butter	20,34	-10,62	0,99	5,88	-3,20	-14,62	-4,94
Cheese	-17,66	-6,68	-4,44	3,61	4,61	-5,77	-25,01
Other dairy products	-9,05	-8,55	-1,14	-4,09	0,99	17,17	-6,69
Total	4,14	-8,67	-24,53	31,26	0,65	0,37	-4,82

Source: based on data SSSU 2019a, 2019b.

Table 2. Structure of industrial production of milk and dairy products in Ukraine (%)

Product	2013	2014	2015	2016	2017	2018	2019
Milk	52.54	58.23	58.09	45.42	58.75	58.47	55.93
Butter	5.01	5.79	5.66	7.58	6.11	5.88	5.00
Cheese	13.29	10.51	10.73	13.59	10.73	11.15	10.47
Other dairy products	29.17	25.47	25.51	33.41	24.41	24.50	28.60
Total	100,00	100,00	100,00	100,00	100,00	100,00	100,00

Source: based on data SSSU 2019a, 2019b.

The structure of dairy production in Ukraine during the analyzed period remained stable – milk (different types) and other dairy products prevailed there (Table 2).

Milk processing belongs to export-oriented segments of Ukrainian food industry. Ukraine significantly strengthened its market position of dairy production, casein in particular, have taken the fifth place (in comparison with 8<sup>th</sup> place in 2011) ranking among countries-exporters of this production (according to their value), milk cream spread – the 13<sup>th</sup> (in comparison with the 37<sup>th</sup>). The key importers of Ukrainian dairy products in 2019 were China, Azerbaijan, Moldova, Armenia and Georgia (Table 3). The demand for some types of national milk processing products increased in the countries of EU (prevailing in the Netherlands), the Middle East (UAE, Saudi Arabi), Africa (Marocco and Egypt) and Asia (the Philippines).

In general, Ukraine has a positive balance of foreign trade in dairy products, however, since 2016 there has been a steady downward trend values of the coefficient of coverage of imports by exports for most items, and especially cheeses (Table 4). The volume of exports of the latter during 2014-2018 decreased by 91.50%, which was caused by the closure of the market by the Russian Federation (RF) for Ukrainian dairy products, the main of which were cheeses. During the mentioned period Ukraine also significantly reduced whey exports (by 50.38%) and condensed milk and cream (by 22.16%). At the same time butter exports increased 5.79 times, milk and non-condensed cream – 2.64 times, buttermilk, fermented milk and cream – 1.73 times.

The result of unstable dairy product export dynamic from Ukraine during 2014-2019 became crucial changes in its commodity structure. Thus, the proportion of cheese (the main national export product in dairy production in 2013) decreased for this period by 38.8% (Table 5). In 2017-2018 butter was the main commodity among export dairy products, however, in 2019 its proportion reduced by 14.2% in an appropriate structure, but the proportion of condensed milk and cream increased by 12.51% instead (code 402).

Table 3. Rating of countries-importers of milk and dairy products from Ukraine during the period of January-December 2019

No.	Milk and cream are not condensed (401)		Condensed milk and cream (402)		Buttermilk, fermented or fermented milk and cream (403)		Whey (404)		Butter (405)		Cheese (406)	
	Country	Share of export amount %	Country	Share of export amount %	Country	Share of export amount %	Country	Share of export amount %	Country	Share of export amount %	Country	Share of export amount %
1	Moldova	34.61	China	25.09	Kazakhstan	49.60	China	39.91	Azerbaijan	16.25	Kazakhstan	42.23
2	Georgia	19.40	Bangladesh	9.04	Moldova	24.73	Philippines	14.67	Moldova	14.07	Moldova	31.96
3	Libya	18.71	Armenia	7.44	Georgia	11.52	Pakistan	8.42	Georgia	9.78	Egypt	7.62
4	Philippines	11.45	Georgia	6.47	Poland	7.65	Malaysia	7.82	Israel	8.18	Kyrgyzstan	3.23
5	Poland	7.17	Israel	6.13	United Arab	3.45	Vietnam	5.27	Netherlands	7.57	Azerbaijan	3.00
6	Cambodia	1.08	Moldova	4.95	Emirates	1.18	Nigeria	2.52	Armenia	6.36	Georgia	2.09
7	Guinea	0.98	Azerbaijan	3.97	Armenia	0.82	Uzbekistan	2.44	Morocco	4.95	Combined	1.86
8	Qatar	0.85	Kazakhstan	3.83	Azerbaijan	0.40	Egypt	1.87	Kazakhstan	4.92	Arabic	1.74
9	Armenia	0.68	Egypt	3.68	Qatar	0.11	Georgia	1.74	Turkey	3.72	Emirates	1.50
10	Nigeria	0.64	Philippines	3.29	Israel	0.07	Poland	1.72	Saudi Arabia	3.59	USA	0.88
	Total	95.57	Total	73.89	Total	99.55	Total	86.38	Total	79.37	Total	96.12

Source: based on data SSSU 2019a, 2019b.

Table 4. Coefficient of import coverage by export (%)

Classification code*	Product	2013	2014	2015	2016	2017	2018	2019 11 months
401	Milk and cream are not condensed	0.77	1.20	5.56	5.11	6.74	7.12	4.87
402	Condensed milk and cream	2.80	9.77	53.58	34.46	21.38	10.34	14.95
403	Buttermilk, fermented or fermented milk and cream	0.23	0.32	0.91	0.66	0.74	1.07	1.04
404	Whey	6.25	5.54	7.41	8.93	10.48	7.02	3.88
405	Butter	0.33	0.99	11.63	9.88	28.98	17.21	29.19
406	Cheese	3.26	1.78	1.49	0.81	0.69	0.46	0.25
Total		2.13	2.17	5.18	3.72	4.35	2.83	1.78

\* Ukrainian classification of goods of foreign economic activity.

Source: based on data from SFSU 2019.

Table 5. Structure of Ukrainian dairy exports (%)

Classification code*	Product	2013	2014	2015	2016	2017	2018	2019 11 months
401	Milk and cream are not condensed	1.08	1.46	2.60	3.44	3.46	5.59	6.84
402	Condensed milk and cream	14.73	37.42	50.25	46.66	28.61	22.40	34.91
403	Buttermilk, fermented or fermented milk and cream	0.95	1.23	1.88	1.64	1.48	3.22	4.08
404	Whey	8.58	8.21	8.73	9.08	8.82	8.32	8.04
405	Butter	4.31	14.61	16.85	23.77	46.09	48.79	34.59
406	Cheese	70.34	37.07	19.70	15.40	11.54	11.68	11.54
Total		100.00	100.00	100.00	100.00	100.00	100.00	100.00

Source: based on data from SFSU 2019.

After a sharp decline due to the devaluation of the national currency in Ukraine in 2014-2015, there was a sharp decline in dairy products import volume, however its increase started in 2016, which totally made up 2.71 times more for three years. The import of condensed milk and cream increased the most (3.42 times more), butter (2.9 times more) and cheese (2.85 times more). However, despite its intensive dynamics of dairy products import into Ukraine, its volumes did not achieve the level of 2013, which was related either with the low demand for this production at domestic markets or with their national production development.

Following the dynamics, the structure of dairy products has been changed. During the period 2015-2019, the proportion of the main product – cheese – increased by 35.19% in it and reached 80,56%, at the same time the proportion of butter reduced by 30,05% and made only 2,11%. In retailing turnover of dairy products in Ukraine, the highest import dependence is observed in rennet cheese processed and fermented one – around 15%, in comparison with milk and dairy products – over 7%, and butter – maker approximately 4% in this segment.

#### **4. Conclusion**

Ukrainian agro-industrial complex (first of all milk segment) is in a stage of deep transformation from post-Soviet rules and standards of functioning to the world, first of all European. Many Ukrainian companies have already achieved this significant progress. The catalyst for these processes was the closure of the Russian market of dairy products and instead the opening of the EU market. However, despite unconditional progress in modernizing the technology of dairy production, improving its quality and expanding the range, in Ukraine there are still a number of unresolved interrelated problems that collectively slow down the development dynamics of milk production.

Insufficient potential and low quality of raw material base for industrial milk processing. Reducing the number of cows in Ukraine by over 26% during 2014-2019 led to a decrease in raw materials for the production of finished dairy products. In turn, lowering the value of this indicator in households is a direct consequence of the increase urbanization processes. However, it is a small-scale form of milk production, which has dominated in Ukraine since the 1990s and cause not only the shortages of raw milk for industrial processing, but also its low quality. Simultaneously achieving high quality milk requires high-tech milking and refrigeration equipment. In addition, milk quality and animal productivity depends on their breed and housing conditions, in particular, the forage base. Obtaining these conditions requires significant investment with a long payback period (6-8 years). Small and even medium-sized farms in Ukraine are not financially able to introduce new technologies of milk production. At the same time, in the EU all raw milk that comes for processing in one form or another, is subsidized (for example, Poland received from the EU 24 billion euros for modernization dairy sector). In this way, European countries stimulate milk producers to maintain and increase the number of highly productive cattle dairy breeds. Under these conditions, domestic producers will be a priori uncompetitive in the European dairy market.

The presence of a shadow segment and a high degree of adulteration in the domestic market of dairy products. The number of small dairy companies that op-

erate without mandatory permits documents and even without state registration is actively growing in Ukraine. They collect low quality milk in households for cash at higher than market prices, produce from it dairy products with resale for cash (mainly on natural markets). Whereas no taxes are paid and none sanitary and hygienic standards of production are kept. The total volume of the shadow segment in the Ukrainian dairy market is estimated at 20-25%. Among counterfeit goods dominate cheeses of various kinds, butter, sour cream, in which substances of plant origin dominate, and the content of raw milk does not exceeds 26% (at best).

Limited Ukrainian dairy exports at growth of its imports. Due to the generally low quality of raw milk, and also non-compliance of milk production with norms, principles and EU regulations, a significant part of Ukrainian enterprises in this segment of food industry cannot be certified by the International Commission on Exports dairy products, and therefore has no access to European markets. Ukraine cannot fully compete with Western producers not only because of high resource intensity of its own dairy production and inconsistencies of the system of its qualitative assessment with the world level, but also with reasons for the stability of the structure and the stability of the segmentation of the European milk market. After the loss of the Russian market (the main importer of Ukrainian cheeses until 2014 year) Ukrainian cheesemakers have not yet been able to reorient their products to highly competitive EU markets, as consumers in these countries prefer cheese varieties in which Ukrainian enterprises have none production experience. At the same time, imports of cheese are growing in Ukraine, the volume of which since 2016 year exceed its exports. Also imports of other dairy products are increasing rapidly, including butter and milk and cream condensed, which are the main positions of domestic exports of dairy products.

Finding mechanisms to overcome the described problems to ensure further development of the dairy segment of the food industry in Ukraine will be the subject of further author's research.

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## Problemy kształtowania potencjału eksportowego ukraińskich produktów do przetwórstwa mleka

**Streszczenie.** *Produkcja mleka i przetwórstwo przemysłowe to ważne segmenty gospodarki krajów Europy Wschodniej, zwłaszcza Ukrainy, która jest jednym z głównych eksporterów niektórych produktów mlecznych. W artykule przedstawiono dynamikę produkcji mleka surowego na Ukrainie według przedsiębiorstw i gospodarstw domowych oraz dokonano oceny porównawczej produkcji przemysłowej przetworów mlecznych według ich głównych rodzajów. Analizie poddano zmiany, jakie zaszły w ukraińskim eksporcie z Ukrainy produktów mleczarskich, biorąc pod uwagę kryterium towarów i położenia geograficznego. Zidentyfikowano główne problemy związane z kształtowaniem potencjału eksportowego ukraińskiego przemysłu mleczarskiego z uwagi na jego surowce.*

**Słowa kluczowe:** *produkcja mleka surowego, przetwórstwo przemysłowe, produkty mleczne, regiony, eksport, import*



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# A Comparative Assessment of Timber Resources for the Woodworking Industry of Ukraine and EU Countries

**Abstract.** *The woodworking industry in Ukraine is a promising export-oriented branch nowadays. The creation of new jobs, the generation of budget revenues, a growth in the competitiveness of the country's regions largely depend on the successful development of this industry. It is therefore necessary to implement best European practices in the areas of forestry development, trade policy and environmental protection in order to provide woodworking enterprises with sufficient raw materials, support them and enable further economic growth of Ukraine's woodworking industry as a whole. The authors conduct a comparative analysis of the structure and production of raw materials for the woodworking industries of Ukraine and EU member states. Its results are used to justify the necessity of increasing the share of industrial roundwood harvested in Ukraine, since Ukraine has sufficient timber resources to ensure a dynamic development of the woodworking industry. The authors argue that the growing share of fuelwood in roundwood production in Ukraine poses a threat to the environmental and national security as well as harming the prospects of the woodworking industry. Therefore, the creation of effective economic and legal instruments for the development of forestry and the woodworking industry is extremely important for strengthening the processes of economic integration in the context of the moratorium on timber exports from Ukraine.*

**Keywords:** *raw material potential, woodworking industry, roundwood, fuelwood*

## 1. Formulation of the problem

The woodworking industry is one of the promising links of the Ukrainian economy, which can ensure the growth of jobs, budget revenues and industrial products for related industries (furniture industry and construction). A sufficient supply of woodworking manufactures with raw materials while maintaining a sus-

tainable environment and the rational use of wood is a necessary condition for the functioning of this economic sector. These issues become especially relevant in the conditions and period of strengthening economic integration processes and the introduction of a moratorium on timber exports from Ukraine.

All this highlights the studying importance of the raw material potential of Ukrainian woodworking manufacturers, especially in comparison with EU countries, in order to develop economic and legal instruments for the forestry and woodworking industry development.

## **2. Literature review**

The key functioning problems of the Ukrainian woodworking industry in modern conditions are considered in many works [Deyneko 2018; Guzhva & Ivanov 2018; Halasyuk 2017; Heyets & Ostashko 2016; Wanat et al. 2018]. Thus, the expediency of maintaining the moratorium on roundwood exports is substantiated in V.V. Halasyuk [2017], and the compliance of this measure with Ukraine's international obligations under the WTO is proved, as well as priority measures are proposed to create favorable conditions for improving the development of Ukraine's woodworking industry and ensuring inexhaustible usage of the forest fund. O.T. Deyneko [2018] outlines the threatening challenges, the main problems and ways to solve them, and the target areas of development of the wood products market. Functioning peculiarities of the woodworking industry in Ukraine in the conditions of economic integration are considered in work V.M. Heyets & T.O. Ostashko [2016], and the economic and legal aspects of the woodworking industry development, problems of irrational use of rare assortments of wood for production needs are described in work I. Guzhva and Y. Ivanov [2018]. Mechanisms of cooperation between local governments and businesses operating in the forestry and woodworking industry of Poland are studied in L. Wanat et al. [2018].

A comparative assessment of the structure and dynamics of the raw material potential of woodworking industries in Ukraine and EU member states is the goal of this article.

## **3. Main results of the study**

Ukraine ranks sixth place among EU countries in terms of forest area (9698 thousand hectares in 2017) and timber reserves (2102 million m<sup>3</sup>), competing with Poland, Italy and Romania [SSSU data 2019, FAO Forestry statistics 2019]. In 2017, 18913.9 thousand cubic metres of roundwood was harvested in Ukraine, which is by 3.5% less than in 2016, but by 8.0% more than in 2012. The dynamics of roundwood harvesting in terms of its main types (industrial roundwood and

fuelwood) is different. Thus, in 2017 the volume of industrial roundwood harvest was 7296.6 thousand m, while in 2016 it was by 12.2% more (8311.3 thousand cubic metres), although the harvest of fuel timber increased by 2.9% in 2017 against 7.8% in 2015 (Table 1).

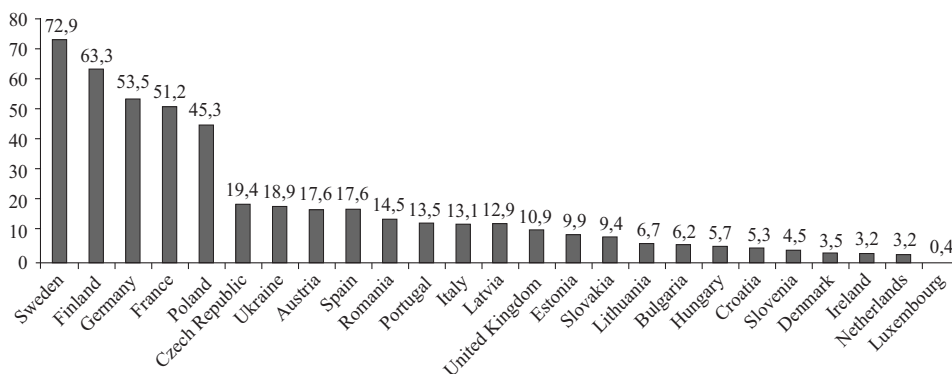
Table 1. Dynamics of harvested wood volume in Ukraine

Wood type	Volume (thousand m <sup>3</sup> ) Growth/decrease rate (%)					
	2012	2013	2014	2015	2016	2017
Roundwood	17506.7 –	18021.9 2.9%	18333.2 1.7%	19267.7 5.1%	19605.7 1.8%	18913.9 –3.5%
Industrial roundwood	7850.8 –	8102.1 3.2%	8158.8 0.7%	8302.6 1.8%	8311.3 0.1%	7296.6 –12.2%
Fuelwood, incl. charcoal	9655.9 –	9919.8 2.7%	10174.4 2.6%	10965.1 7.8%	11294.4 3.0%	11617.3 2.9%

Source: based on data from SSSU 2019.

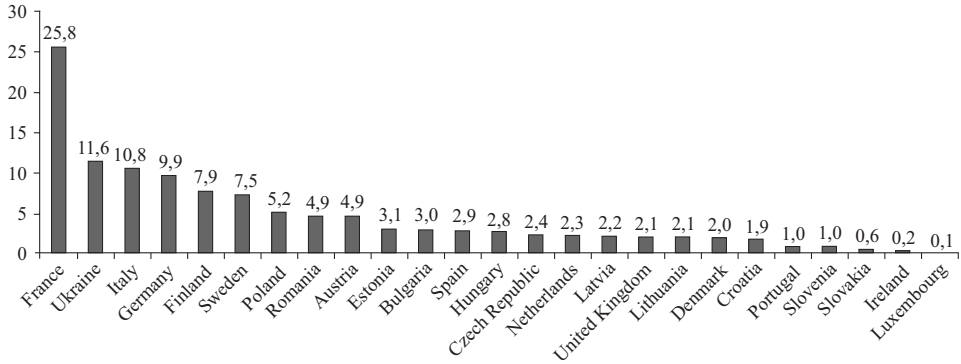
In terms of harvested roundwood, Ukraine ranked 7th place among EU countries in 2017, ahead of its closest neighbors in the ranking (Austria and Spain) by 7.1% and Romania (by 23.4%), but behind the Czech Republic (by 2.4%), Poland (by 58.3%) and France (63.1%) (Chart 1). Instead, in terms of the volume of harvested fuelwood, Ukraine ranked 2<sup>nd</sup> place in 2017 (against 3<sup>rd</sup> place in 2011) among EU countries, giving first place only to France (Chart 2). The latter is the undisputed leader in the EU in terms of harvested fuelwood. According to this indicator, France outperforms the nearest followers more than 2.5 times. However, its importance tends to decrease, while in Ukraine, on the contrary, it increases.

Chart 1. Volume of roundwood harvested in 2017 in Ukraine and EU countries (million m<sup>3</sup>)



Source: based on data from SSSU 2019 and FAO Forestry 2019.

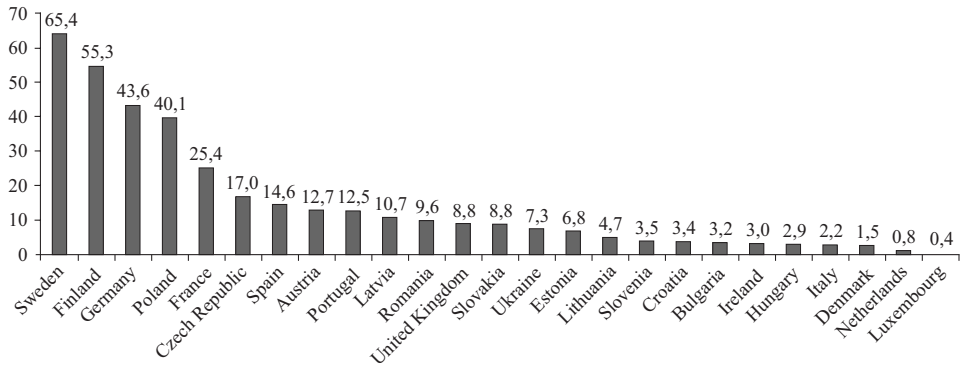
Chart 2. Volume of fuelwood harvested in 2017  
in Ukraine and EU countries (million m<sup>3</sup>)



Source: based on data from SSSU 2019 and FAO Forestry 2019.

In terms of industrial roundwood production, Ukraine ranked 14<sup>th</sup> place during 2012-2017, ahead of Estonia by 6.6% (in 2017), Lithuania by 56.5% and Slovenia – 2.1 times ahead, but behind Slovakia (by 20.2%), Great Britain (by 21.1%), and Romania (by 31.3%) (Chart 3). It should be noted that Poland differs insignificantly from Ukraine in terms of forest area, timber reserves and roundwood production, but it ranks 4<sup>th</sup> place among EU countries in terms of industrial roundwood production, beating Ukraine 5.5 times (40.1 vs. 7.3 million m<sup>3</sup> in 2017).

Chart 3. Volume of harvested industrial roundwood in 2017  
in Ukraine and EU countries (million m<sup>3</sup>)

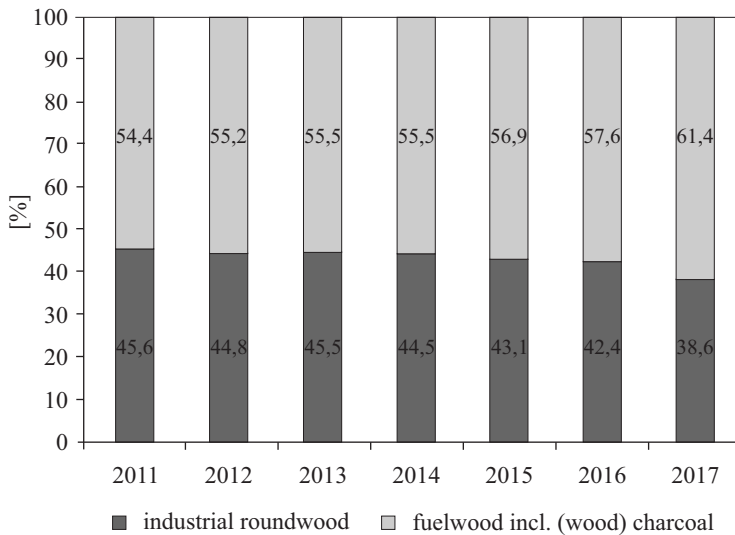


Source: based on data from SSSU 2019 and FAO Forestry 2019.

Fuelwood has invariably been the major part of roundwood harvested in Ukraine: its share increased by 4.3 p.p. during 2011-2016, and by 3.8 p.p. in 2017 compared to 2016 (Chart 4). In contrast to Ukraine, most roundwood harvested

in the vast majority of EU countries is classified as industrial roundwood, with a much smaller share of fuelwood. For example, the share of fuelwood in 2017 was 11.6% and 12.3% in the neighboring countries with a similar forest landscape – Poland and the Czech Republic respectively, Slovakia – only 6.3%, and in the EU as a whole – 23.2% [FAO Forestry statistics 2019]. Hence, the sharp deterioration in the roundwood harvested structure in Ukraine can be interpreted as a threat to environmental and, consequently, national security as well as the prospects of woodworking industries.

Chart 4. Roundwood harvested in Ukraine (by main types) (%)

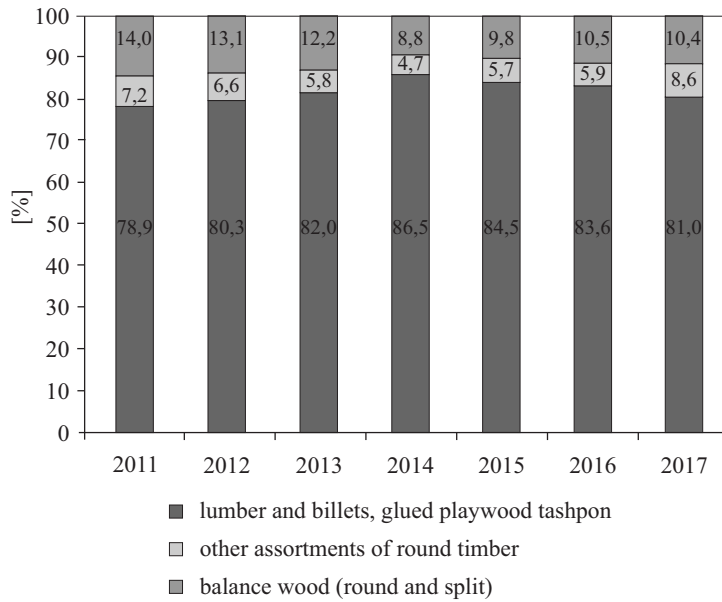


Source: based on data from SSSU 2019.

The structure of industrial roundwood harvested in Ukraine during the analyzed period was steadily dominated by lumber and billets, glued plywood and veneer, the share of which in 2017 was 81.0% against 86.5% in 2014, and 78.9% in 2011 (Chart 5). The decrease in the share of this type of roundwood in the structure of industrial roundwood in Ukraine was a consequence of its harvesting reduction.

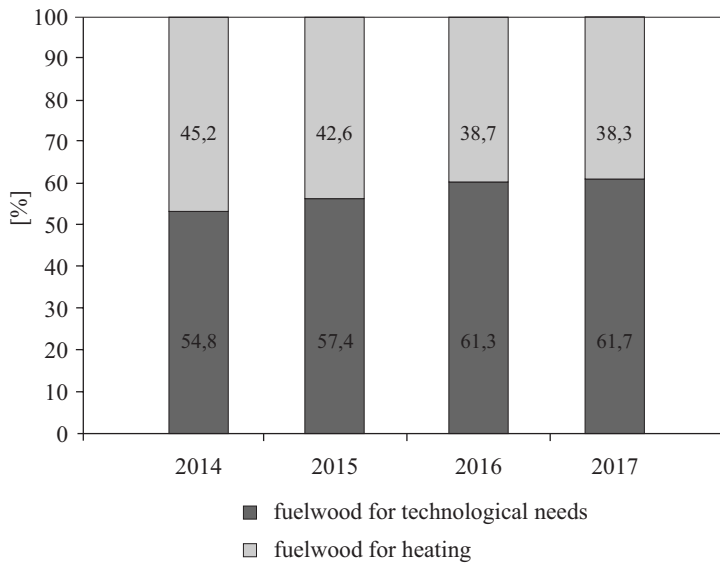
Thus, the harvested volume of timber and billets, glued plywood and veneer decreased by 16.2% during 2015-2017 (from 7053.7 thousand m<sup>3</sup> in 2014 to 5909.2 thousand m<sup>3</sup> in 2017), including by 14.9% in 2017 [SSSU data 2019]. As a result, Ukraine ranked 11<sup>th</sup> place in terms of the harvested volume of timber and billets, glued plywood and veneer in 2016 (against 10<sup>th</sup> place in 2015) among the EU countries, while Poland ranked 4<sup>th</sup> place, the Czech Republic – 6<sup>th</sup> place, and Romania – 8<sup>th</sup> place [SSSU data 2019].

Chart 5. Industrial roundwood harvested in Ukraine (%)



Source: based on data from SSSU 2019.

Chart 6. Fuelwood harvested in Ukraine (by usage) (%)



Source: based on data from SSSU 2019.



The tendency of the structure deterioration of not only harvested industrial roundwood, but also fuelwood is deepening in Ukraine. Thus, the structure of fuelwood was dominated by firewood for heating during 2014-2017, the share of which increased by 6.9 p.p. during the mentioned period (Chart 6). This, in turn, became a consequence of an increase in the volume of firewood for heating by 28.7%, in particular, by 12.9% in 2015.

## 4. Conclusion

In conclusion, it can be stated that Ukraine has sufficient raw material potential to ensure the dynamic development of the woodworking industry. The 6<sup>th</sup> place of Ukraine among the EU countries in terms of timber reserves and 7<sup>th</sup> – in terms of roundwood harvesting are the proof of this. However, in contrast to the vast majority of EU countries, the structure of harvested domestic roundwood is dominated by fuelwood – 61.4% (4<sup>th</sup> place after Cyprus, Italy and the Netherlands). Ukraine ranked 2<sup>nd</sup> place in 2017 among EU countries after France in terms of harvesting this type of wood.

Identified structural and dynamic features of timber that is harvested in Ukraine may be the result of increasing loss of forest stands, changes in world markets, domestic demand for certain types of wood, capacity of woodworking enterprises, regulatory mechanisms and many other multifaceted factors. Detailing, explanation and substantiation of the reasons for the deterioration of the structure of roundwood that is harvested in Ukraine requires separate special scientific and analytical studies.

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## Ocena porównawcza potencjału surowcowego przemysłu drzewnego Ukrainy i krajów UE

**Streszczenie.** Przemysł drzewny na Ukrainie jest zorientowany na eksport. Tworzenie nowych miejsc pracy, realizacja budżetu i zwiększanie konkurencyjności regionów w dużej mierze zależy od pomyślnego rozwoju tego sektora przemysłu. Aby w wystarczającym stopniu zapewnić przedsiębiorstwom zajmującym się obróbką drewna surowce, wesprzeć je i zapewnić dalszy wzrost gospodarczy przemysłu drzewnego na Ukrainie jako całości, konieczne jest wdrożenie najlepszych praktyk UE w dziedzinie rozwoju leśnictwa, polityki handlowej i ochrony środowiska. Autorzy przeprowadzili analizę porównawczą struktury i dynamiki potencjału surowcowego przemysłu drzewnego Ukrainy i państw członkowskich UE. Pozwolilo im to uzasadnić konieczność zwiększenia udziału drewna do przerobu przemysłowego w całości drewna okrągłego pozyskanego na Ukrainie, ponieważ Ukraina ma wystarczający potencjał surowcowy, aby zapewnić dynamiczny rozwój przemysłu drzewnego. Rosnący udział drewna opałowego zagraża bezpieczeństwu środowiska, a także perspektywom rozwoju przemysłu drzewnego. Opracowanie skutecznych instrumentów ekonomicznych i prawnych dla rozwoju przemysłu leśnego i drzewnego jest więc ważne dla wzmocnienia procesów integracji gospodarczej i jest konieczne w związku z wprowadzonym moratorium na eksport drewna z Ukrainy.

**Słowa kluczowe:** potencjał surowcowy, przemysł drzewny, drewno okrągłe, drewno opałowe, drewno do przerobu przemysłowego

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## **Trends in the Use of Land Resources of Amalgamated Territorial Communities in the Lviv Region**

***Abstract.** The rational use of land resources is one of the challenges facing Amalgamated Territorial Communities (ATC) at the current stage of the decentralization process. The article presents trends in the use of land resources in ATCs in the Lviv region and provides a comparison between the dynamics and structure of agricultural land use in the Lviv region and in Podkarpackie province (Poland). The Lviv region is characterised by a shrinking share of agricultural lands, which are increasingly being used for real estate development. A reverse trend can be observed in Podkarpackie province. In addition, the quality of soils in the Lviv region has been found to be deteriorating as a result of soil cover degradation caused by industry-related pollution. To ensure that soils are used rationally, it is necessary to undertake certain of organizational and economic, ameliorative, agro-technical, agro-chemical activities.*

***Keywords:** land resources, agricultural lands, arable land, Amalgamated Territorial Communities*

### **1. Introduction**

Current realia of the globalization of the Ukrainian economy call for drastic changes in the current mechanism of ensuring rational land use and land protection. These changes aim to ensure radical re-structuring of relations and lie in the establishment of the system of sustainable land use. However, for some objective and subjective reasons, in the course of the long-lasting land reform there have been some delays in the reform of environmental and economic as well as legal mechanisms of rational land use, some formalism in the determination of the goals and tasks.

The above circumstances have led to the situation when the key task of the land reform – to drastically change the attitude to land through introduction of a wide spectrum of ownership forms, engagement of owners who are interested in and capable of efficient, rational, economically beneficial and environmentally safe use of land resources, has not been settled.

As the result, the quality of soils in the region is getting worse, the level of land productivity remains low. Modern lessees normally do exhaustive farming, while state activities aiming at land protection are almost not taken any longer.

Therefore, one of the key tasks of the contemporary state policy in the field of land use is to develop the mechanism to ensure sustainable land use development and, on its basis, to ensure its environmentalization, protection and guarding of land as a component of the environment, preservation, multiplication and reproduction of its productive force as a resource.

## **2. Literature review**

The theoretical basics of the problem of rational land use and land protection development mechanism were laid down by such scholars as V.M. Zhuk [2017], A.M. Tretiak [2014], O.A. Hrytsak [2019], K. Górka [2014], Z. Poławski, M. Łuszczuk [2010], and others.

However, many aspects of the problem under study still remain controversial and stem from further scientific substantiation in the process of new land relationship development. At the current stage no system of sustainable land use mechanism has not been developed. As the result of division into land parcels and transfer of agricultural lands into private property to citizens, the previous system of land use has changed, there have been set up agricultural holdings monopolizing agricultural production, this also leading to some changes, but no new system that would meet the requirements of sustainable land use has been established. That is why there is an urgent need for improvement of the environmental and economic mechanism of rational land use and land protection development.

## **3. Purpose**

The goal of the article is to assess the trends in the use of land resources in Lviv region in order to get the necessary information base for the development of strategic documents related to planning of the structure, quality and efficiency of the land resources in the region.

## 4. Results

Some ongoing negative processes in the use of agricultural lands affect the environmental status of land use, generally affecting its stability. While in 1988 in Lviv region due to application of 15.1 t/ha of organic fertilizers the losses of humus were fully compensated for, in 2005 the deficit of humus increased by 0.71 kg per 1 ha of arable land as the result of application of organic fertilizers up to 1.0 t/ha and mineral fertilizers from 245 kg/ha to 65 kg/ha. Mineral fertilizers were applied only on a half of arable lands. In 2018 application of organic fertilizers did not meet the needs of soils.

The status of agricultural lands has deteriorated substantially over the last decades and has become dangerous. This primarily refers to soil cover which has lost its self-regulation to a great extent. The overall area of degraded and low-fertility soils of arable lands in the region as of the beginning of 2007 made up 173.8 thousand ha (20.77% of the arable lands in the region). In 2018 itself 3.3 thousand ha of degraded, low-fertility and technogenically-polluted soils were conserved. Recultivation of soils since 2013 has not been conducted. Affected and discharged lands make up over 12 thousand ha and 8 thousand ha, respectively.

Table 1 provides the characteristics of the land resources of Lviv region for the last 8 years. Over this period the share of agricultural lands has gone down from

Table 1. The structure of the land resources of Lviv region and Podkarpackie voivodeship by the types of lands (%)

Types of lands	2011	2012	2013	2014	2015	2016	2017	2018
	Lviv region							
Agricultural lands	57.95	57.9	57.87	57.81	57.78	57.77	57.75	56.80
Forest stock lands	31.81	31.82	31.82	31.82	31.82	30.13	30.13	32.21
Lands under construction	5.14	5.18	5.20	5.26	5.30	5.09	6.61	7.34
Open marshy lands	0.43	0.43	0.43	0.43	0.43	1.49	1.49	0.43
Open lands without plant cover or with minor plant cover	1.40	1.40	1.40	1.40	1.40	0.34	1.83	0.66
Water stock lands	1.96	1.96	1.96	1.96	1.96	1.96	1.96	1.94
Types of lands	Podkarpackie voivodeship							
Agricultural lands	53.47	53.14	52.85	52.56	52.52	51.72	53.9	54.08
Forest stock lands	40.2	40.47	40.75	40.86	40.83	41.52	39.27	39.04
Lands under construction	4.34	4.41	4.47	4.60	4.66	4.76	4.81	4.86
Open marshy lands	0.10	0.10	0.09	0.09	0.09	0.09	0.10	0.10
Open lands without plant cover or with minor plant cover	0.61	0.61	0.57	0.61	0.61	0.61	0.61	0.60
Water stock lands	1.14	1.14	1.14	1.15	1.15	1.17	1.18	1.19

Source: data of the Main Statistics Office in Lviv region, GUS, <https://bdl.stat.gov.pl/BDL/dane/podgrup/tablica> [accessed: 15.03.2020].

57.8% to 56.8%. The share of the lands for building construction has risen by 40%. The share of open lands with minor plant cover has reduced twice.

Instead, for example, in Podkarpackie voivodeship (Poland, the region bordering on Lviv region and having almost an identical eco-system of land surface) during the analyzed period the share of agricultural lands was mainly going upwards. In particular, in 2018, as compared to 2016, such growth made up 2.36 p.p. However, the share of forest resources went almost 1 p.p. down. Besides, by the share of agricultural lands, in 2018 Lviv region exceeded the figure for the voivodeship by 2.72 p.p., but it was lagging behind by 6.83 p.p. in terms of forest stock lands. Unlike Lviv region, the share of lands under construction in Podkarpackie voivodeship over the period under analysis did not undergo significant changes (+0.52 p.p.) and in 2018 it was 2.48 p.p. lower than the figure for the region.

Table 2 provides the characteristics of agricultural lands in Lviv region. As we can see it, the share of arable lands is going down both in absolute figures – by 25 thousand ha, and in relative figures – from 62.9% to 62.1%. The area of pastures and perennial plantations is going down. Minor growth is manifested only by hay meadows – by 8 thousand ha.

Similar trends towards the increase in the area of arable lands can also be detected in absolute figures, however, reduction of their share can also be traced in Podkarpackie voivodeship. Instead, the share of hay meadows and pastures has still preserved its downwards trend both in absolute and relative figures.

The processes of soil cover degrading have become more intensive recently, this being caused by industry-related pollution. The greatest threat for the environment is posed by soil contamination with radionuclides, heavy metals, pesticides, infectious agents.

According to the environmental passport of Lviv region in 2018, negative environmental phenomena spread over more than 50% of the territory of Lviv region. Particularly dangerous in this aspect are Subcarpathia and the Carpathians. In the area of 1.4 mln ha (64%) karst appears, salt basins occupy 0.17 mln ha (8%), there are 450 active motions.

It should be noted that by other qualitative indicators (acidity, marshiness, overmoisturizing) the land plots of Lviv are characterized by a stable trends towards deterioration.

Thus, in the structure of the land resources of Lviv region considerable areas are occupied by soils characterized with unsatisfactory properties (washed away, wind-eroded, lithosolic, overmoisturized, etc.), this being caused by industry-related factors, as well as by negative natural characteristics – these are degraded and low-fertility soils. Their rational use requires certain activities of organization and economic, ameliorative, agro-technical, agro-chemical nature.

Availability of high-fertility lands makes the issues of their intensive use according to their designation, inadmissibility of unsubstantiated transfer of con-

Table 2. The structure of agricultural lands in Lviv region and Podkarpackie voivodeship (ha, %)

Types of lands	2011	2012	2013	2014	2015	2016	2017	2018
	Lviv Region							
All agricultural lands	1265056	1263963	1263370	1262066	1261546	1261200	1260800	1240000
Arable land	796053	795678	794683	793810	794121	793800	793400	770900
Hay meadows	187625	188005	188058	187890	187640	187600	187600	195400
Pastures	257621	256534	256890	256546	255828	255800	255700	250700
Perennial plantings	23043	23031	23023	23105	23242	23300	23400	22800
	Structure							
All agricultural lands	100,00	100,00	100,00	100,00	100,00	100,00	100,00	100,00
Arable land	62,93	62,95	62,90	62,90	62,95	62,94	62,93	62,17
Hay meadows	14,83	14,87	14,89	14,89	14,87	14,87	14,88	15,76
Pastures	20,36	20,30	20,33	20,33	20,28	20,28	20,28	20,22
Perennial plantings	1,82	1,82	1,82	1,83	1,84	1,85	1,86	1,84
	Podkarpackie voivodeship							
All agricultural lands	954163	948295	943170	937886	937196	923013	961962	965058
Arable land	618940	614265	610185	606217	603720	595660	591191	587926
Hay meadows	30777,72	30530,07	30312,22	30100,15	29961,29	29546,63	29310,41	29134,09
Pastures	154154	154303	154326	154643	157356	152844	148913	147790
Perennial plantings	—	—	—	—	—	—	48109	56165
	Structure							
All agricultural lands	100,00	100,00	100,00	100,00	100,00	100,00	100,00	100,00
Arable land	64,87	64,78	64,70	64,64	64,42	64,53	61,46	60,92
Hay meadows	12,41	12,43	12,45	12,45	12,44	12,44	11,79	11,71
Pastures	16,16	16,27	16,36	16,49	16,79	16,56	15,48	15,31
Perennial plantings	—	—	—	—	—	—	—	—

Source: data of the Main Statistics Office in Lviv region.

siderable areas of arable lands into the domain of non-agricultural production particularly topical. Therefore, the current system of land protection against their use not in accordance with their target designation requires further improvement, and for this sake along with administrative measures some measures of economic influence, in particular, taxation of non-target use or introduction of fines should be used.

In our opinion, an effective factor in the implementation of sustainable land use must be creation of amalgamated territorial communities, that will enable to optimize land use and to focus the necessary financial resources on the activities aimed at preservation and restoration of land resources.

Unfortunately, Lviv region was not sufficiently active in joining in the processes of decentralization and establishment of amalgamated territorial communities. Thus, according to the open data portal<sup>1</sup>, as of the beginning of 2019 the area of the region made up 21,833 sq. km, and its population exceeded 2,513.8 thousand persons. However, out of the general number of territorial communities in the region (556) amalgamated territorial communities made up only 40 units. Their area amounted to 4,867.11 km, or 22.29% of the overall territory of the region (while the average figure for Ukraine is 31%), and the population of ATCs – 343.2 thousand persons, or 13% of the population.

As it can be seen from Figure 1, ATCs of Lviv region cover less than one fourth of the region in terms of territory.

During the decentralization reform ATCs of Lviv region got 41.5 ha of agricultural lands transferred from state ownership to municipal ownership. That makes up only 3.34% of the land resources of the region, having such designation.

For the sake of improving land use it would be expedient to introduce the methods of environmental land use audit and environmental land management project examination as the mechanism of regulating rational use and protection of lands, improving the economic and legal mechanism of rationalization of land use, determining economic losses of agricultural production resulting from deterioration of the quality of lands in temporary use for non-agricultural needs.

The system of environmental assessment of the planned economic activity is now used almost in all the countries of the world and by many international organizations as a preventive, cautioning tool of the environmental policy. Environmental assessment of the rationalization of land use and protection stands for the process of systematic analysis and assessment of the environmental consequences of the planned use of lands as well as taking the results of this analysis into consideration in the planning, designing, approval and taking of activities aimed at improved land use and protection. Assessment of the effect of economic

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<sup>1</sup> <http://www.portal.lviv.ua> [accessed: 15.03.2020].



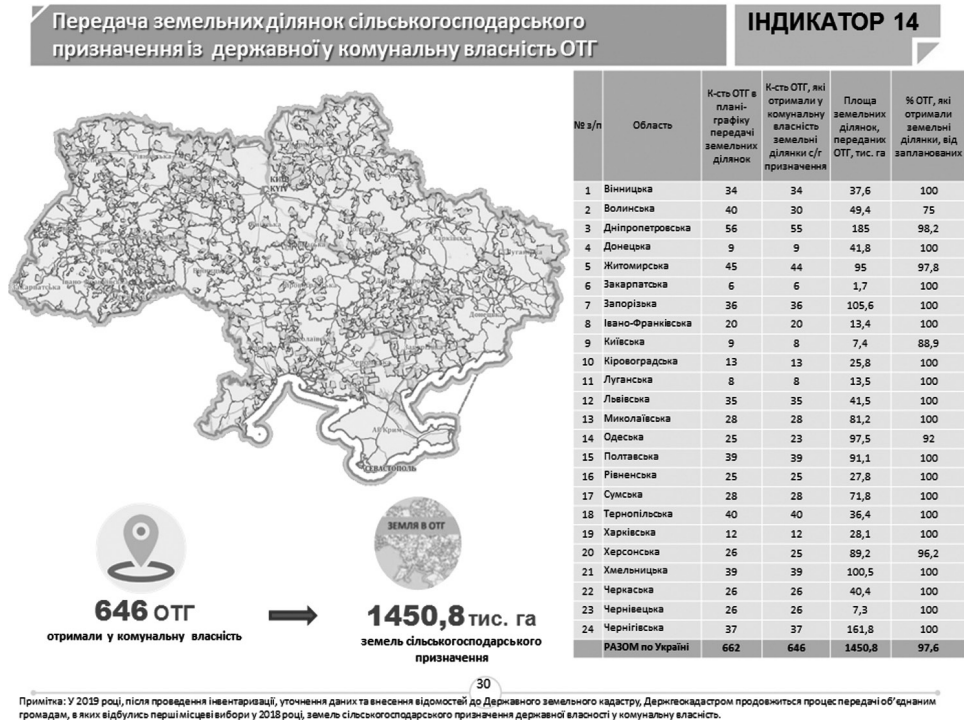


Figure 1. ATCs of Lviv region

Source: *Monitoring of the power decentralization process and local self-government reform*, <https://decentralization.gov.ua/uploads/library/file/477/10.10.2019.pdf> [accessed: 15.03.2020].

activity on the land use and protection along with environmental examination of land management projects constitute components of the system of environmental assessment of the rationalization of land use and protection.

Thus, environmental assessment shall be made both in the course of environmental audit, and at the level of specific land management projects related to land use organization. Along with that, environmental assessment should also be conducted at the level of strategic documents (state and regional programs of land use and protection, the schemes and separate large land management projects, etc.).

The process of environmental land use assessment should include:

- analysis (forecast) of prospective effects of the project use of lands on the environment and assessment of its importance;
- coordination of project decisions with the stakeholders for the sake of finding mutually acceptable solutions;
- use of the results of effect assessment and coordination in the decision-making process related to project use of lands.

Environmental assessment of land use can be effective in case its materials are used not just to pass decisions on the possibility of the use of lands within the project in general, but also to pass different decisions in the course of its planning. Therefore, coordination as well as use of the results of environmental assessment in decision-making should be considered as the necessary components of the process of environmental land use assessment.

Due to aggravation of the environmental and resource situation in Ukraine, intensification of degrading phenomena and processes, the need to solve urgent problems of protection and rational use of lands as well as for the sake of creating the mechanisms of implementing some articles of the Land Code of Ukraine, the Laws of Ukraine “On Land Protection,” “On the State Control over Land Use and Protection” and “On Environmental Audit,” there is a need for improvement of existing and development of new economic and legal mechanisms of land use rationalization. One of such mechanisms is standardization and introduction of standards in the field of sustainable land use. The set of environmental and economic standards as well as norms aims to ensure the regulatory base for achieving the balance between the levels of land use intensity, harmful effect on the land resources and their capacity for soil restoration.

## 5. Conclusions

Taking into account the natural and economic capacity available in Lviv region, its historical and geographical peculiarities, the strategic goal of prospective land use development lies in creating an effective system of sustainable land use on the basis of most efficient use of land, labour and other resources, which should at the same time ensure material welfare of residents and environmental safety of the region. An important role in the development of rational use and protection of lands is played by economic losses resulting from deterioration of the quality of land. This figure reflects environmental consequences of man-caused activity as well as includes all the negative economic consequences of the violation of lands during construction of non-agricultural facility construction.

Comparison of the conditions of using lands for construction and their use after they return to agricultural production allows to make a conclusion that changes in the quality of lands are accompanied by reduced productivity as well as additional money investment.

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## Tendencje w użytkowaniu zasobów lądowych połączonych terytorialnych hromad w obwodzie lwowskim

**Streszczenie.** *Racjonalność wykorzystania zasobów ziemi jest jednym z wyzwań, przed jakimi stoją gminy na obecnym etapie decentralizacji. W artykule przedstawiono wyniki analizy trendów w wykorzystaniu zasobów lądowych połączonych terytorialnych hromad w obwodzie lwowskim, a także dokonano oceny porównawczej dynamiki i struktury zasobów ziemi oraz użytkowania gruntów rolnych w obwodzie lwowskim i w województwie podkarpackim (Polska). W pierwszym regionie zauważono tendencję do zmniejszania się udziału gruntów rolnych przy zwiększaniu się udziału gruntów pod zabudowę, a w drugim tendencję odwrotną. Ponadto stwierdzono pogorszenie się jakości gleb w regionie lwowskim na skutek degradacji pokrywy glebowej spowodowane zanieczyszczeniami przemysłowymi. Racjonalne wykorzystanie gleb wymaga zatem wielu działań o charakterze organizacyjno-ekonomicznym, usprawniającym, agrotechnicznym i agrochemicznym.*

**Słowa kluczowe:** *zasoby ziemi, grunty rolne, ziemia uprawna, połączone terytorialne hromady*



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## **The Impact of Applying the Principles of Corporate Social Responsibility on the Market Value of Shares on the Warsaw Stock Exchange**

***Abstract.** The Corporate Social Responsibility concept is increasingly being spread in the economy. Managers managing companies often implement its principles in an attempt to achieve competitive advantage. The approach to managing enterprises according to moral principles, respect employees' law, protecting the environment, respecting minorities should reflect into prices of shares of given companies. On capital markets, a similar approach is represented by the idea of Socially Responsible Investing, where investors eliminate from their portfolios the shares of morally questionable companies, polluting the environment, using harmful technologies. On stock exchanges there are indexes created to indicate companies, that respect the CRS principles. An examples such indexes on polish capital market are: Respect Index, that has been present for a long time, and its successor WIG-ESG. Researches suggest, that investment in capital markets, in shares of companies, that respect the CRS principles, give higher return rates, although this is not still certain.*

***Keywords:** Corporate Social Responsibility, prices of shares, stock exchange*

### **1. Idea of the concept: Corporate Social Responsibility**

Today's business environment, in which entrepreneurs operate around the world, is becoming an increasingly turbulent system. Depending on the country, the market, in which they operate, presents a number of challenges and problems to overcome. Only sometimes they face emerging opportunities. Emerging obstacles on the part of governments, competition and new technologies force them to take all sorts of actions, that they must take in order to develop or at least maintain

the status quo. Depending on the industry and the region, this impact varies. In particular, entrepreneurs operating in low-margin industries find themselves in difficult situations, forcing them to make considerable efforts to continue business.

Apart from various types of dimensions of enterprises operations, the main goal of their operations is usually to maximize value for their owners [Buczowska 2012: 9]. This phenomenon is particularly evident in developing economies, where the “profit” category for the entrepreneurs become the main motive of action, pushing all other aspects to the background. Such an approach in social or environmental terms may give rise to tensions and difficulties in functioning in the long time. An enterprise operating in such a difficult environment tries to overcome problems and difficulties using various methods and means. They must show increased flexibility, pay special attention to the level of costs, or be able to learn emerging reality better than other entrepreneurs.

Paradoxically, Corporate Social Responsibility (CSR) is an element that can help enterprises gain a competitive advantage. It is a relatively new entrepreneurship trend, both in Poland and in the whole world, having its roots in the 1990s. In simple words, it is an idea that, in addition to the category of profit, should take into consideration social goals, that are not uneconomical. It applies to all enterprise activities related to the whole management process. Starting from the strategy and ending with operational activities [ISO 26000 Guidance]. The main categories of areas, in which an enterprise should operate, from the point of view of social responsibility, include first of all:

- ensure employment,
- eliminating discrimination,
- avoiding environmental pollution,
- other.

The list of above activities is called CSR (Corporate Social Responsibility). Of course, CSR in terms of companies concerns specific people, managing these enterprises. Hence the analysis, in this area, focuses on the behavior of managers of companies, and not on them as social structures. The concept of CSR says, that in order to maintain a long-term competitive advantage, enterprises should maintain a balance between making a profit, commitment to the owners, and other obligations to creditors, employees, the local community, towards clients, or environment [Hąbek 2009: 70]. The concept of corporate social responsibility is also becoming an element of social awareness. The prototypes of using it, were companies representing western culture, in particular scandinavian companies. Through various types of media, this idea reaches worldwide. CSR is slowly becoming a requirement among companies operating on the global market. The idea of CSR has already been noticed by Peter Drucker, that every economic organization bears full responsibility for its impact on the local community and the socie-

ties, in which it operates [Drucker 1999: 87]. Corporate Social Responsibility is defined in various ways by various authors. First of all, this means voluntary respect for ecological and social values in making business decisions. An important element is the fact, that this concept takes into consideration all stakeholders, connected in different ways through the activities of enterprises.

The first cited definition can be given by the European Commission, which defines CSR as the concept of voluntary consideration of social and ecological aspects by company, when conducting commercial activities and in contacts with stakeholders [Promoting a European Framework 2001]. According to Bazzichi, CSR is a voluntary combination of social and economic matters in business commercial relations and with stakeholders, who are employees, customers, suppliers, the community, in which the company operates, government and the media [Bazzichi 2003: 496]. The sentence that sums up the idea of CSR may be the definition of Reyes which says, that CSR concerns the way, in which business decisions and activities of an enterprise affect on all entities, that deal with it, inside and outside the organization [Kietliński, Reyes & Oleksyn, 2005: 132]. CSR development was also included in areas of standardization ISO (International Standardization for Organization). The ISO 26000 standard provides CSR and is one of the most important standards for a number of public, private or non-profit organizations [ISO 26000 Guidance].

The concept of CSR is the subject of special attention of the European Commission, which recognized it as a strategic area [Hąbek 2009: 20-24]. The expression of it was the announcement in 2001 of the Green Paper. This document systematized the concept of CSR. According to the document, CSR is the idea according, to which enterprises make decisions or operate aimed at positively influencing society and the surrounding environment. The described concept also focuses on employee aspects: prevention of discrimination, keep of human rights or occupational health and safety [Hąbek 2009: 20-24].

The involvement of companies in CSR, which is also a form of CSR evolution, can be distinguished on three levels:

1. The first level means the operation of an enterprise, which is in accordance with the requirements of the law of a given country or region. There are, for example, paying taxes, compliance with employee rights, with emission standards or with orders and bans.

2. The second level is expressed in reducing or eliminating the negative effects of enterprise activity in the social and environmental area.

3. The last level focuses on increasing positive actions and creating value through investing, innovation or partnership for various individuals or groups of people. There are a number of activities to be highlighted, such as creating new jobs, raising the living standards of residents, and supporting local communities [UNIDO 2002: 10].

Another concept distinguishes CSR at four successive levels:

- social economic responsibility, i.e. acting in such way, that the venture is profitable,
- acting in accordance with legal regulations,
- ethical actions,
- philanthropic activity [Salzmann et al. 2006: 3].

## **2. Shareholders a stakeholders as entities involved in CSR**

Based of above considerations on CSR we can distinguish entities that are interested in activity of enterprise and their relationships. Although, they are often quite different in terms of type and geographical location, all of them are referred as stakeholders. These are various types of entities generating various demands on companies. They can be included to a wide range of objects interacting with the enterprises. One can distinguish: suppliers, customers, employees and also shareholders (investors). These are also entities that bear the risk and effect on the level of risk taken by enterprises, as well as entities in voluntary or forced relations with the companies [Hąbek 2009: 75]. The stakeholder concept appeared in the 1980s. It begins with an article written by Richard E. Freeman *Strategic Management – A Stakeholder Approach*. It defines stakeholders as a group of entities or an entity, that is affected by the organization or who affects the achievement of the organization's goals [Freeman & Velamuri 2008: 6]. The stakeholder concept is in opposition to the idea, that an enterprises should represent the interest of its shareholders or owners only. Comparing these two groups. For shareholders, the most important value is the result, while for stakeholders is their satisfaction. The stakeholder theory is based on building long-term business implementation with all stakeholders: owners, employees, suppliers, and the local community authorities [Hąbek 2009: 75-77]. You can identify different types of stakeholders. Importantly, they also include investors who are also shareholders. In general, all stakeholders can be divided into three groups:

1. Consubstantial stakeholders, i.e. stakeholders without which the company could not exist. These are entities that work for an enterprise or entities without which it would not be possible to do business.

2. The next group are contractual stakeholders. These are entities that operate with the company on a contract basis. These are all kinds of suppliers, customers, co-operators.

3. The last group includes Contextual Stakeholders, who support the companies in area of acquiring a good name and accepting their activities. There are two types of communities – both local and global organizations representing care or



protection of the environment [Rodriguez & Ricart 2002: 30-31, after: Paliwoda-Matiolańska 2005: 241].

### **3. A general description of the concept of socially responsible investing (SRI)**

The concept, that formed development of CSR is Socially Responsible Investment (SRI). The idea, by definition, rather concerns investment processes carried out by enterprises, but it can also be referred to the capital markets. Defining SRI is various. Researchers define them with an emphasis on different elements, that can be equated with concepts such as: sustainability, responsible, socially, ethical, green investing, mission-related investing [Czerwonka 2013].

Therefore, responsible investing can be defined as a strategy of investing funds, that equally strives to maximize profit, achieving social good or taking into account environmental social governance. It also occurs under the names: ethical investing, sustainable investments or green investments.<sup>1</sup> Historically, the origins of the SRI concept can be traced to times, hundreds of years ago when, for example, resignation from projects based on human harm for instance slave trade, and later the activities which resulted in violation of employee rights, were abandoned. These initiatives have also been the subject of various churches activities in the past. The SRI approach also has its mark on the functioning of capital markets. It expresses in the form of appropriate selection of instruments for the investment portfolio. The selection of instruments takes place in a variety of ways according to appropriate criteria. The most common method of shaping the portfolio with SRI is screening. Screenening is divided into positive and negative. Positive screening is based on the selection of shares of companies or funds that are best identified and oriented in the context of non-economic aspects or solving part of environmental problems. These include the following industries: health care, renewable energy production and science. Negative screening, on the other hand, consists in eliminating from the portfolio companies from industries that have poor results in the context of social, environmental factors or corporate governance. In this context, it is necessary to highlight the shares of such industries as: gambling, arms trade, etc. The Table 1 provides examples of positive and negative screening.

Of course, screening is not the only one method of selecting SRI-compliant securities. The following actions can also be used to build the SRI portfolio:

- ethical exclusions,
- investment asset ranking (best-in-class),
- sector selection (pioneer screening/thematic investment propositions),

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<sup>1</sup> [www.respectindex.pl](http://www.respectindex.pl) [accessed: 15.06.2020].

Table 1. Negative and positive screening

Negative screening	Positive screening
<ul style="list-style-type: none"> <li>– companies associated with the manufacture of tobacco products</li> <li>– companies producing and selling alcohol products</li> <li>– casinos and companies providing related services with gambling</li> <li>– weapon manufacturers</li> <li>– nuclear reactor manufacturers and companies operating nuclear power plants</li> <li>– enterprises investing in countries with regimes such as Burma or using cheap labor in developing countries</li> <li>– enterprises producing pornographic magazines, producing studios aggressive movies</li> <li>– enterprises that carry out research on animals and also producing equipment for catching, tracking animals</li> <li>– enterprises that make significant profits from killing animals according to Islamic tradition (ritual slaughter)</li> <li>– companies that modify plants genes</li> </ul>	<ul style="list-style-type: none"> <li>– enterprises, in which there are correct relations between employees</li> <li>– enterprises, in which there are provided appropriate working conditions</li> <li>– recycling companies, no producing toxic products, caring for the environment</li> <li>– enterprises implementing the principles of sustainable development</li> <li>– enterprises employing people with disabilities, national minorities</li> <li>– companies operating with respect for human rights</li> <li>– energy producing companies from renewable sources</li> <li>– enterprises supporting sustainable agriculture, biodiversity, and industrial application of biotechnology</li> <li>– socially engaged enterprises (conducting charity activities, sponsorship, educational programs)</li> </ul>

Source: Lulewicz-Sas 2014: 147.

- normative selection (norms-based screening),
- compliance with basic values (simple screens/simple exclusions),
- engagement,
- integration.

The indicated strategies for selecting shares for the investment process can be described as complementary to each other. The difference between them lies in the different stages of the investment management process [Czerwińska 2009].

#### **4. Respect Index as a tool grouping on the WSE the shares of companies involved in corporate social responsibility**

The SRI concept is well known among polish companies or rather among managers managing them, but it is not widely used. About 59% of enterprises in Poland are familiar with the SRI concept, although only 33% of them use its tools. The tools include reports on the application of good practices and indications of the Respect Index [Lulewicz-Sas 2014: 147]. It should be noted that, in contrast to CSR, SRI is still not studied enough [Lulewicz-Sas 2014: 142-147]. Capital markets from period of time have been supporting CSR ideas. It is shown by the

stock indexes – created to accumulate shares of companies positively rated from the point of view of CSR. There are many indexes in the world assessing companies from the point of view of CSR, i.e. including strategies for social interests, environmental protection and the interests of other stakeholders.

1. American capital market has been first. The company Dow Jones developed and in September of 1999 began the publication of the Dow Jones Sustainability Index (DJSI). The main criterion in the selection of companies for this index has become their analysis at three levels: economy, environmental protection and social responsibility.

2. The next one was the Calvert fund, which in 2000 started to public the Calvert Social Index (CSI). Like the previous one, collected companies supported CSR idea especially: environmental protection, integrity in general, and issues related to compliance with standards and principles in terms of the workplace.

3. FTSE4GOOD has become another index. Published since 2001. On the one hand, it is based on the elimination of companies characterized, among others, by the production of weapons, drugs and non-adhering to the principles of social equality. Another factor was the positive selection, i.e. the admission of companies whose activities were characterized by work for environmental protection, having positive relations with communities, having positive experience in maintaining human rights and the fight against corruption.

4. Among the indexes based on CSR principles, one should be mention: the FTSE Johannesburg Stock Exchange Socially Responsible Index (JSE SRI) published since 2004 or KLD Global Sustainability Index Series (GSI) published since 2007 for securities of North America, Europe, Asia and the Pacific.

The idea of CSR has also reached the Polish capital market. On 4 of July, 2007, the Warsaw Stock Exchange adopted new corporate governance rules. The initiating document was named “Dobre Praktyki Spółek Notowanych na GPW” ” (Good Practices of WSE Listed Companies). On 19 of May, 2010, the WSE revised this document, adapting the introduced rules to changes in regulations and trends in other countries in area of CSR. The RESPECT INDEX project is a further reflection of the implementation of the CSR concept or the social responsibility of investments on the polish capital market. The original action under this idea was the WSE initiative in 2009 aimed at creating the first in Central and Eastern Europe index of companies responsible in accordance with the CSR concept. The purpose of the Respect Index project is to build an index to indicate companies, that are managed responsibly. In addition, this index indicates to investors companies, that are better managed using better business practices, investor relations, having an information policy, quality of reporting, information governance, investment attractiveness. Clear selection criteria for companies are an indication for investors. The project is run by Warsaw Stock Exchange, main operator of polish capital market, together with external entities. The main goal of the project

is the cyclical examination of listed companies and based on explicit criteria for their allocation or removal from the Respect Index. The Respect Index includes companies that operate in accordance with the best standards in the field of:

- management,
- corporate governance,
- information governance,
- investor relations,
- in the field of social ecological factors.

It should also be emphasized that elements such as good practices in the matter of information politics, which is the basis for issuing opinions of the companies, are also taken. In Polish conditions, there are also a number of other indicators and documents assessing and determining the work of institutions and market-related entities. You can see:

- Kodeks Dobrych Praktyk Domów Maklerskich (Code of Good Practice for Brokerage Houses),
- Zasady Etyki Zawodowej Maklerów i Doradców (The Professional Ethics of Brokers and Advisors),
- Kodeks Dobrych Praktyk Inwestorów Instytucjonalnych (Code of Good Practice for Institutional Investors),
- Kodeks Dobrych Obyczajów Przy Prezentacji Wyników oraz Klasyfikacji Funduszy Inwestycyjnych (Code of Good Practice for the Presentation of Results and Classification of Investment Funds),
- Standardy Inwestycyjne Powszechnych Towarzystw Emerytalnych (Investment Standards of Universal Pension Societies),
- Zasady Dobrej Praktyki Bankowej (Principles of Good Banking Practice),
- Kanon Dobrych Praktyk Rynku Finansowego (Statements of Good Financial Market Practices).<sup>2</sup>

The naturally appearing question is, how the affiliation of individual company shares, affects their profits, whether investors prefer the securities of companies, that understood CSR principles in their investments. A number of studies on effectiveness of SRI have been conducted around the world. We can distinguish here: Statman in 2000, Renneboog et al. in 2008, Derwall and Koedijk in 2009, Bauer et al. in 2005. Despite the fact that the research results did not give unequivocal answer to the question about the effectiveness of SRI in relation to traditional equity portfolios. According to Rogowski and Ulianiuk [2012] the industry, in which a given company operates is also significance. Depending on the economic situation, this may give incorrect conclusions at certain times [Lulewicz-Sas 2009: 142-147].

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<sup>2</sup> [www.respectindex.pl](http://www.respectindex.pl) [accessed: 15.06.2020].

## 5. Market value of companies applying the principles of CSR on the WSE

The most important question is, whether a portfolio consists of shares included in respect index would give higher rates of return than all companies. It is about answering the question, whether using CSR principles in the management of the company directly affects the value of the company. This type of research has taken place in the past. As an example is the study for the polish shares in period 2009-2013 performed by Agata Lulewicz-Sas. The respect index was compared with the rate of return from WIG20. The following conclusions could be drawn from this study. Author said, that the portfolio of shares included in the Respect Index, in all the years covered by the survey, guaranteed investors a higher risk premium. This situation took place regardless of the general market situation. In periods of market decline, shares of companies using CSR practices were characterized by significantly smaller market adjustments of the value of share prices or brought similar to a neutral financial result [Lulewicz-Sas 2009: 142-147].

Considering the data from the period from beginning of 2009 to end of 2019 the can be observed rate of return on level: 150,8%<sup>3</sup> (Chart 1).

Chart 1. Quotation of Respect Index in period 31.12.2008-31.12.2019

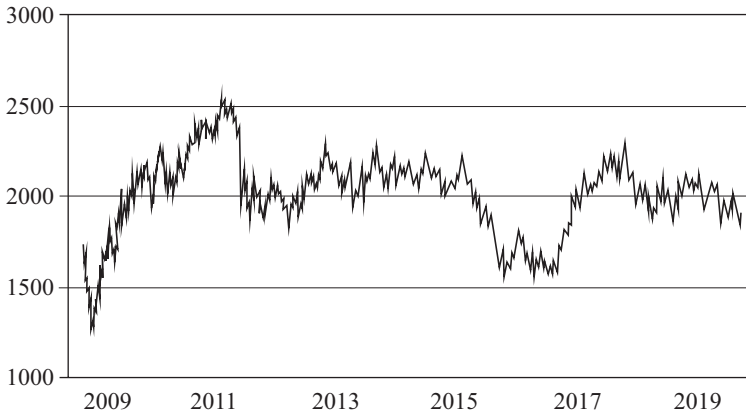


Source: [www.bankier.pl/inwestowanie/profile/quote.html?symbol=RESPECT](http://www.bankier.pl/inwestowanie/profile/quote.html?symbol=RESPECT) [accessed: 15.06.2020].

In the same period, the rate of return on investment in securities of WIG20 index gave a rate of return on level of 20,18% (Chart 2).

<sup>3</sup> [www.bankier.pl/inwestowanie/profile/quote.html?symbol=RESPECT](http://www.bankier.pl/inwestowanie/profile/quote.html?symbol=RESPECT)[accessed: 15.06.2020].

Chart 2. Quotation of WIG20 in period 31.12.2008-31.12.2019



Source: [www.bankier.pl/inwestowanie/profile/quote.html?symbol=WIG20](http://www.bankier.pl/inwestowanie/profile/quote.html?symbol=WIG20) [accessed: 15.06.2020].

Table 2. Comparison of Respect Index and WIG20 rates of return

Date	Respect Index			WIG20		
	quotation	year's change (%)	change in whole period (%)	quotation	year's change (%)	change in whole period (%)
31.12.2008	1000			1789		
31.12.2009	1709	70,90		2388	33,48	
31.12.2010	2259	32,18		2744	14,91	
31.12.2011	2005	-11,24		2144	-21,87	
31.12.2012	2591	29,23		2582	20,43	
31.12.2013	2559	-1,24		2400	-7,05	
31.12.2014	2674	4,49	150,80	2315	-3,54	20,18
31.12.2015	2268	-15,18		1859	-19,70	
31.12.2016	2515	10,89		1947	4,73	
31.12.2017	3077	22,35		2461	26,40	
31.12.2018	2792	-9,26		2276	-7,52	
31.12.2019	2508	-10,17		2150	-5,54	

Sources of data: [www.bankier.pl/inwestowanie/profile/quote.html?symbol=RESPECT](http://www.bankier.pl/inwestowanie/profile/quote.html?symbol=RESPECT) and [www.bankier.pl/inwestowanie/profile/quote.html?symbol=WIG20](http://www.bankier.pl/inwestowanie/profile/quote.html?symbol=WIG20) [accessed: 15.06.2020].

The rates of returns clearly show that in the period from end of 2009 to end of 2019, the rates of return from the Respect Index is higher, than than from investment in WIG20 (Table 2). However, data from the literature suggest that the conclusion about higher rates of return for indices of socially responsible companies is not entirely certain. Reasons can be distinguished, unfavorable economic

conditions for some industries [Lulewicz-Sas 2009: 142-147]. The Respect Index is listed on the WSE until the end of 2019. After this date, it is replaced by only WIG-ESG index, whose listing started on 3 of September, 2019.<sup>4</sup>

## 6. Conclusions

Summarizing, the current economic environment, the activities of entrepreneurs, companies and other system entities are currently undergoing a series of turbulent changes. Regardless of the country, the number of problems, that they have to solve is growing. The idea of Corporate Social Responsibility, which appeared in the world in the years 90s paradoxically, despite greater efforts for all sides of business, improves the situation of especially entrepreneurs. By implementing the ethical principles of running business, it became also the base for a new kind of economy. The principles of CSR covering the area of law, through the development of local communities and providing employees with better working conditions have been noticed, also by EU institutions. Entrepreneurs activity in the areas of Corporate Social Responsibility have led to the creation of a new group of entities, that have benefits of its idea, called stakeholders. All it lead to better people's lives. On capital markets the CSR idea creates a Socially Responsible Investing, as a new approach to investment. Thanks of it, investors on various capital markets receive simple information, about the profile of enterprises' operations from the point of view of morality, sustainability, responsibility for employees, ethics, green investments and other positive aspects of their activity. They can make a decision excluding from their portfolios the stocks of weapons producers, companies involved in gambling, alcohol and cigarettes producers, that break the human rights. On the basis of the above-mentioned aspects, the new capital market indices were created around the world and gave rise to new investment trends. This also applies to companies listed on the polish capital market. Of course, the question that appears is, how the CSR rules, applied by some companies listed on the WSE, affect on changes and the level of the value of their prices. Respect Index has been established and brought list of companies, that take into account the CSR principles in their strategies. This question comes to comparing investments in shares included in the WIG20 and Respect Index. The comparison of changes in both indexes between the beginning of 2009 and the end of 2019 gave clear answer. Investments in Respect Index resulted in almost eight times higher rates of return, than on investments in shares included in WIG20. The above results may suggest, that the companies included in the Respect Index continue the growing trend of returns rates, although experiences from other

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<sup>4</sup> *GPW uruchamia indeks WIG-ESG*, [strefainwestorow.pl/wiadomosci/20190813/gpw-uruchamia-indeks-wig-esg](http://strefainwestorow.pl/wiadomosci/20190813/gpw-uruchamia-indeks-wig-esg) [accessed: 15.06.2020].

markets in the world do not clearly confirm this tendency. This positive assumption may be particularly important for investors looking for less risky investment strategies. The fact of a higher rate of return in the shares included in the Respect Index, in the past, may appeal to investment in shares that support CSR idea. From that point of view investors can also look for investment opportunities by taking advantage of market anomaly strategies to, for instance Efficient Market Hypothesis, such as momentum strategies. One of the factors enhancing the strength of this effect is the continuation of the long lasting trends, meaningless of rational or irrational reasons.

The fact remains, that on the Polish capital market, companies that respect the CRS principles and are also a part of the Respect Index in 2009-2019 received higher rates of return, than shares included in the WIG20 index. Due to the fact, that the study concerns a relatively new index, it is not possible to draw any unequivocal conclusions. Problem is also in a short period of research time. It seems, that further studies are necessary to confirm this positive trend.

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## **Wpływ stosowania zasad społecznej odpowiedzialności biznesu na wartość rynkową akcji na Gieldzie Papierów Wartościowych w Warszawie**

**Streszczenie.** *Koncepcja społecznej odpowiedzialności biznesu (CRS) jest coraz częściej stosowana w gospodarce. Osoby zarządzające firmami wdrażają jej zasady w celu osiągnięcia przewagi konkurencyjnej. Zarządzanie zgodne z zasadami etyki, przepisami prawa pracy, ochroną środowiska, poszanowaniem mniejszości przekłada się na notowania akcji takich firm. W przypadku notowań akcji na rynkach kapitałowych podobne podejście reprezentuje idea inwestowania odpowiedzialnego społecznie (SRI), w ramach którego inwestorzy eliminują ze swoich portfeli akcje firm wątpliwych etycznie, zanieczyszczających środowisko, wykorzystujących szkodliwe technologie. Na giełdach powstają nawet indeksy spółek przestrzegających zasad CRS. Przykładem takich indeksów na polskim rynku kapitałowym są: istniejący od dawna Respect Index oraz jego następcą WIG-ESG. Badania wskazują, że inwestycje na rynkach kapitałowych w akcje spółek przestrzegających zasad CRS dają wyższe stopy zwrotu, choć nie jest to pewna zależność.*

**Słowa kluczowe:** *społeczna odpowiedzialność biznesu, ceny akcji, giełda*



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## **Determinants of Social Dysfunctions of Local Government Units**

**Abstract.** *Turbulent conditions in which local government units in Poland operate are manifested in the form of several dysfunctions identified broadly in the literature. Although an in-depth analysis of all levels of local government in Poland makes it possible to extend the list of its dysfunctions, many researchers recognise the need to identify causes of this socio-economic reality. The article focuses on one possible interpretation of the issue, taking into account critical findings in the field of socio-economics, thus deepening the determinants of social dysfunctions of local government units, including: autocratic, bureaucratic, imperfect community. The survey points out that ontological security in decision-making processes, as well as in the context of discursive consciousness, could be responsible for most dysfunctions to the local self-government in Poland. The author states that the participation of citizens at all levels of the local community life, including those at the local government level, is a significant factor dynamizing the activity of local government itself. Therefore in conclusions the author presented several alternatives to strengthen local government democracy, corresponding to the theoretical part of the study, including the Arenstein's Ladder of Citizen Participation. Hence, this work is complementary to contemporary research on local self-governance, and its conclusions could have been a foundation for future analyzes based on primary data.*

**Keywords:** *local self-government, local government units, local government's dysfunctions, social barriers, bureaucracy, local government's determinants*

### **1. Introduction**

In recent years, one could witness a disturbing course of local government units (LGUs) in Poland that are backed by several self-governance dysfunctions identified in "Report on the state of local self-government in Poland." The report

indicates and describes in more detail relevant local government's dysfunctions, including these of a social nature, that is [Bober et al. 2013]:

- autocratic – gradual weakening of local government democracy,
- bureaucratic – administration inefficiency, associated with clerks domination in LGUs,
- imperfect community – developing informal patron-client relationships (based on patrimonialism and clientelism), as well as developing social capital with restrained subjectivity.

Further, an in-depth analysis of local self-government in Poland might allow us to extend the list of its dysfunctions. However, the conclusion presented in the Report indicates already the call for causes of this socio-economic reality. The article draws attention to one possible interpretation of the issue, taking into consideration crucial findings in the field of social sciences. Social dysfunctions presented in the report become critical in this article, which provides data analysis on social barriers at the local self-government level in Poland. This approach enabled an answer to the question regarding social barriers at the level of local self-government in Poland. This paper tries to emphasize the theoretical perspective based on the assumption that social system such as local community exists, and it is essential to the local self-government, that social structure, social statuses, and roles are authentic. Hence, this work is complementary to the contemporary study on the determinants of social barriers in local government units.

The primary aim of the paper is to examine social barriers to the local self-government taking into consideration dysfunctions identified in "Report on the state of local self-government in Poland." Resulting from the primary aim – the secondary aim is to identify social determinants to the LGUs. The survey was conducted with a particular focus on structuration theory examining foreign and domestic literature. Data analysis was based on *data mining* (data science) to create new ideas. This bottom-up (exploratory and predictive) analysis was carried out using sophisticated analysis software such as SPSS based on *Social Diagnosis* database.

The analysis based on secondary data led to the formulation of hypotheses – social determinants to the local self-government – which in the nearest future should contribute to further research and development in the field of LGUs, based on primary data. This procedure seems to be necessary, especially in the context of conceptual work, i.e., the theoretical validity of the concepts analyzed, the correct selection of research indicators [Babbie 2007], the correctness in the field of finding the proper direction of a cause-effect relationship [Nowak 2008].

## 2. Dysfunctions caused by routinized interactions

Through the 20th century, most researchers stated that individuals are free and could take actions without being influenced by society, or that individuals

are a product of social structures and their beings and decisions are not freely made. To move beyond those disputes, Anthony Giddens introduced a middle way (Fig. 1) which has not determined whether someone sees agency (human action and intention) or structure as being more influential.

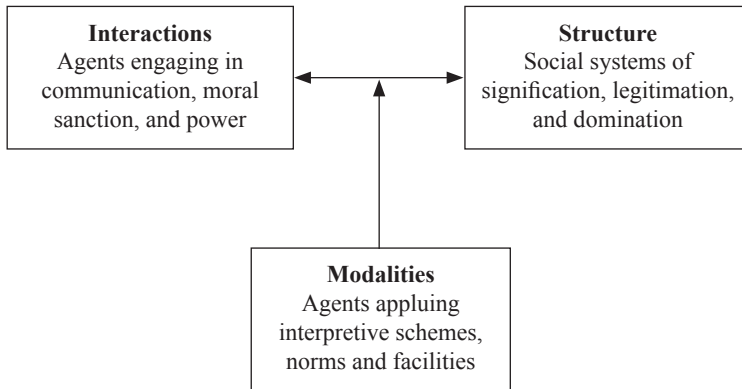


Figure 1. Structuration theory

Source: Giddens 2003.

Therefore, relationships in organizations such as the local government unit could be explored following the theoretical concept of Anthony Giddens [2003]. Explaining such units, Giddens introduced it as rules and resources used by spatial and temporal social actors (and embedded in agents' memory traces). These rules should be seen as procedures that are understood correctly and introduced in various situations. Rules are also characterised by specific features that should be kept in mind because of their explanatory function, i.e., they are used often in conversations, interactive rituals,<sup>1</sup> or daily routines of local government units' employees. These rules have been captured, understood, and became part of a standard knowledge of actors (here employees of LGUs). Although they are characterised as informal, unsaved and inexpressible nor firmly rooted in interpersonal skills [Giddens 2003], some rules might be normative, which means it is possible to articulate them openly, or at least to refer to them (i.e., some of them are well understood in a hidden manner, and thus used to control the flow of interaction in a manner not to be easily/clearly put into words).

Resources, on the other hand, could provide some facilities for people employed in local government units in decision-making areas. The ability to take ac-

<sup>1</sup> Interactive ritual [Goffman 2006] is individual or collective behaviour of a particular scheme, which is the result of changing reality. Interactive ritual runs precisely and formally according to the selected scenario.

tion requires resources such as physical facilities and organizational capabilities. In this context, the resource could be understood as a factor responsible for power – that is to say, by engaging resources in the interaction it is possible to persuade people to take some action, or even to formulate an action plan [Turner 2006].

Both resources and rules are transformative and intermediary communication elements. That means that resources could be transformed according to various patterns, as well as they could be used to perform actions and achieve goals by exercising different forms and levels of power by LGUs and in LGUs. Rules, on the other hand, are responsible for building up various combinations of methods and formulas that improve communication, enable interaction, and mutual adaptation of people. The intermediary nature of resources and rules manifests in the fact that actors of socio-economic reality such as LGUs employees, use them to create, maintain, or transform time-space relations [Turner 2006].

According to the structuration theory, rules and resources of social structure are interrelated. Precisely the same applies to the relation between power (authority), sanctions, and means of communication. Therefore, in social systems, such as LGUs, where people interact with each other, power (authority) is being used to protect sets of entitlements and duties, as well as it is a means of communication. It is also possible to exercise power (governance) only through communication and sanctions. In this case, the social structure refers to rules and resources that could be transformed when used in specific circumstances. The transformation seems to be crucial because it implies that social interaction and social structure are interrelated and interdependent (they simply influence each other) [Turner 2006]. Therefore, the local government unit could be seen according to the structuration theory as the political and economic institution. The most important criterion that determines the type of institution is the hierarchy of rules and resources (Table 1).

Table 1. Political and economic institutions according to the structuration theory

Type of institution	Rules and resources hierarchy
Political institution	The use of authority (domination) together with interpretative rules (importance) and with normative rules (legitimisation)
Economic institution	The use of allocation (domination) together with interpretative rules (importance) and with normative rules (legitimisation)

Source: Turner 2006.

It should be emphasised that interactions in socio-economic reality are subjected to the dynamics of institutional processes. That is why it seems almost impossible to separate the economic, political, legal, and symbolic orders. Institutions are not external to their local government units, which means that they are shaped by using various rules and resources in current social relations. In addition,

the most basics of all rules and resources, i.e., power, domination, legitimation, are linked to institutionalisation [Turner 2006].

The key issue in exercising power at the local government level is understanding the dynamics of human action with its not always measurable consequences. Taking action is always preceded by so-called reflexive monitoring, namely focusing, calculation, or consequences impact. That monitoring results from two levels of consciousness, such as discursive consciousness (understood as the ability to express knowledge verbally) and practical consciousness (understood as knowledgeability in relation to own action and social situation, but it is so integrated as to be hardly noticed). People in LGUs constantly use both levels of consciousness to interpret all events, but they are rarely able to articulate them. Therefore, almost all human activities in LGUs are contextual – actions have unconscious dimensions, viz., they succumb to pressure, which gives the activity a specific direction. Thus, there is no direct relationship between an action and its motive. Actors of the local government reality (especially LGUs employees) are able to rationalise their actions so that direct relationships with motives seems to be what drives their actions. The ontological security [Giddens 2007] is responsible for the unconscious dimension of a person's activity. That security is one of the basic driving forces for an action, based on the desire to be trustworthy and resulting from the ability to reduce anxiety in social relations. Social anxiety is often based on routinized interactions. Unconscious motives of ontological security require interaction that is routinized (i.e., predictable and permanent), as well as regionalised (i.e., geographically arranged). Taking into consideration the above mentioned human's actions, it is possible to depict LGUs' patterns linked to the very essence of its employees' actions [Giddens 2007].

The routinized interaction patterns ensure that they would stay permanent, and thereby they are able to reproduce the structure (such as rules and resources) and institutions (such as LGUs). Thus, they introduce an element of predictability and security to the actions of LGUs' employees, as well as LGUs' clients. That is why routinized interactions are the most influential factor for the basic aspects of the local self-government (structure and activity of the entity) [Giddens 2007].

Based on mechanisms of routinized interactions, the theoretical context presented in this section explained probable causes of social barriers at the self-government level. The ontological security in decision-making processes, as well as in the context of discursive consciousness, could be responsible for most dysfunctions to the local self-government in Poland. Some actions of entities responsible for LGUs might result from the need to build a sense of security or from striving to build trust. Discursive consciousness' behaviour patterns and attitudes of people who are able to influence others could be equally crucial here.

### 3. The gradual weakening of the local government democracy

The Polish administrative reform of 1998 was to bring real changes at the local government level. The reform was supposed to increase the importance of local government in the eyes of its community and translate into local and regional development. The different types towards achieving full citizen power (strengthening local government democracy) are presented as the ladder of citizen participation with each level corresponding to the extent of citizens' power in determining their local reality (Fig. 2). Arnstein [1969] explained two first steps (1 and 2) on the ladder as non-participative where LGUs public support could be achieved only by directed education and good PR. Second group consists of three steps, so-called degrees of tokenism (3, 4, 5) engages local communities in LGUs activities to some extent with no possibility of decision-making nor planning. The last group of local government democracy levels (6, 7, 8) presents full peoples participations in LGUs tasks (full local government democracy). The eight-step ladder is a simplification, yet it serves to explain the point that there are many vital stages of citizen participation at local government level in the eyes of its community.

Therefore, society's perception of the local government seems to be a key to understanding the process of the gradual weakening of the local government

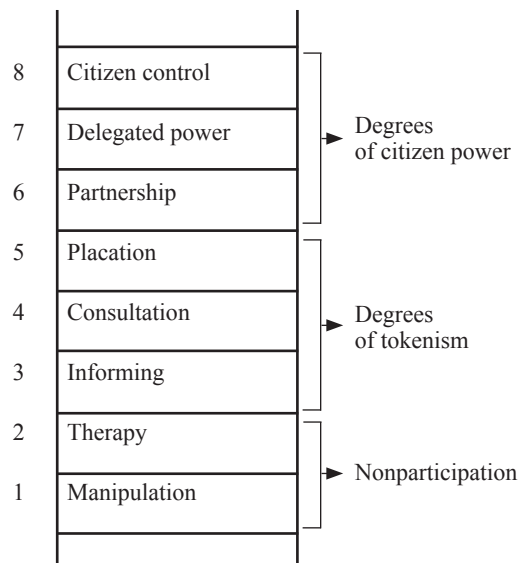


Figure 2. The ladder of citizen participation

Source: Arnstein 1969.



democracy. It is enough to mention here that in 2012 almost every second respondent [TNS OBOP 2012] negatively assessed their local authorities (48%); nevertheless, respondents acknowledged that their role for the local community organization and development is crucial (75%). Nowadays, the majority of respondents positively assess their local authorities (67%); negative opinion gives every fifth inhabitant of Poland (21%) (Feliksiak 2015). Changing their opinion on the local government's performance over time is a common phenomenon, and it should not cause much concern, especially since it is also often determined by peoples political preferences.

The perception of local government's impact on the development of so-called "small homelands" has been changed since 2012. The majority of respondents (58%) believe that the development of their city depends on municipal self-government [Hipsz 2015]. Almost half of the Polish society (45%) recognizes the important role of powiat, every third resident (37%) sees the important role of voivodship in the development of their place of residence. Furthermore, almost every third respondent (31%) points out that the central government's authorities have a big influence on their cities development. Besides, a growing number of people notice the important role of the European Union (41%) as well. According to Polish society, the local government's influence is not as important itself. Therefore the thesis on the gradual weakening of local government democracy may seem right.

The weakening role of local authorities in the development of cities could be confirmed based on another study conducted by Natalia Hipsz. Commune self-government's authorities influence decreased from 64% in 2010 to 58% in 2015, powiat's from 50% in 2010 to 45% in 2015, voivodeship's from 40% in 2010 to 37% in 2015 [Hipsz 2015]. At the same time, respondents admitted that the European Union authorities' influence on city development increased from 34% in 2010 to 41% in 2015. This indirectly indicates the weakening role of local authorities in decision-making processes. It is obvious that access to financial resources by institutions managing EU funds promotes routinization and, thus, reproduction of the structure and institution itself.

Polish society's opinion on being able to influence their city or commune affairs is divided. Number of people who declared such an attitude (49%) is almost the same as those who have an opposite view (48%). On the contrary, only every fourth Polish resident (24%) is convinced that they influence decisions made on the national level [Hipsz 2015]. On the one hand, it could increase the involvement in local community affairs. On the other hand, it could cause isolation and withdrawal from social involvement.

Nevertheless, Polish society mobilization at the level of their declarations is visible, especially regarding responsibility for the local community. The majority of Poles (81%) are in favour of regulations that implement a minimum level of

public consultations to be carried out in the commune [TNS OBOP 2012]. Moreover, 82% of respondents would accept a possible delay in the public investment or decision-making process. Furthermore, the vast majority of respondents consider a civic interpellation (82%) and civic, legislative initiative (79%) to be crucial. The high level of social support for changes in local self-government policy might indicate some concerns arising from the weakening role of local government democracy itself.

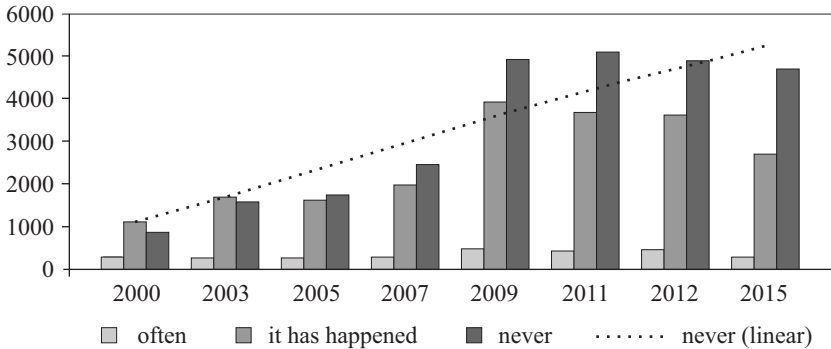
On the contrary, study *Proposals regarding systemic changes in Poland* shows few opinions (5%) for the democratisation of political life. Only 3% of respondents were in favour of citizen empowerment; 0.4% were in favour of promoting local community involvement in LGUs decision, and 0.2% were in favour of strengthening the role of local governments [Badora 2015]. These declarations might result from the common opinion that management at the local government level is not as important as social issues, health care, etc. Just as vital here is the level of awareness regarding the influence of local government on the level and quality of life. Nowadays, cultural patterns and lifestyles of society, determined by numerous duties and interactions, could reduce their interest in local community problems.

#### 4. Bureaucracy

The bureaucracy itself, along with all its consequences for the economy, was discussed in detail by Max Weber [2002]. Without going into technical details of this phenomenon, it is worth to find its indicators based on experience shared by public opinion especially. The first one that could shed some light on the functioning of local government might be the issue of disruptions while taking care of an official matter [*Social Diagnosos* 2019]. The percentage of people declaring frequent problems while taking care of an official matter over the period 2000-2015 seems to decrease from 19.1% in 2000 to 8.4% in 2015. The percentage of those who have encountered difficulties when dealing with an official matter is still at a similar and very high level (62% in 2000, 57% in 2015). It means that in practice, at least every second person in Poland has encountered significant obstacles on their way to accomplishing some official matter. On the other hand, it should also be emphasized that in the analysed period (years 2000-2015), the percentage of people who have never encountered problems during the implementation of an official matter increases (from 18.9% in 2000 to 34.7% in 2015). The second crucial bureaucracy indicator is the high need to lean on personal relationships while taking care of an official matter (Chart 1).

Although relying on acquaintances in order to finalise an official matter seems to decrease over time (from 12.3% in 2000 to 3.8% in 2015), it still requires

Chart 1. Connection-based Taking Care of an Official Matter



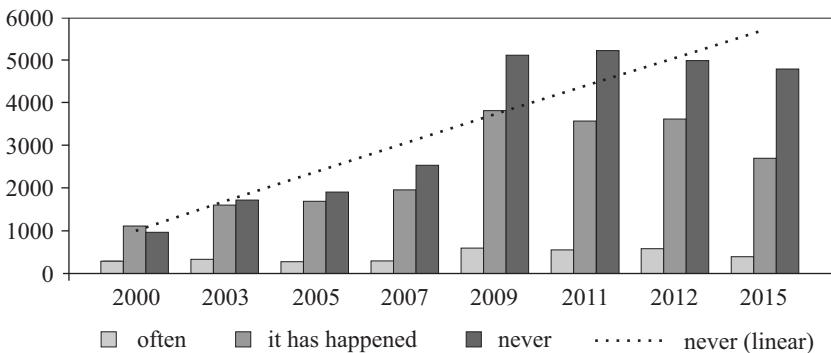
n in: 2000 – 2224, 2003 – 3556, 2005 – 3632, 2007 – 4674, 2009 – 9385, 2011 – 9242, 2012 – 9038, 2015 – 7782

Source: www.diagnoza.com [accessed: 2.11.2019].

monitoring and a systemic solution (Chart 1). Almost half of the population, while taking care of an official matter, has encountered difficulties requiring the support of other people or seeking alternative ways to finalise it (from 49.2% in 2000 to 35.3% in 2015). It could mean that public administration suffers from the governance ineffectiveness. However, it is promising that overtime growing percentage of people declared that they never leaned on personal relationships while taking care of an official matter (from 38.5% in 2000 to 60.8% in 2015).

A sense of powerlessness and humiliation when taking care of official matters could indicate an incorrect way of providing public service for citizens (Chart 2).

Chart 2. A Sense of Powerlessness and Humiliation when Taking Care of Official Matters



n in: 2000 – 2227, 2003 – 3557, 2005 – 3765, 2007 – 4678, 2009 – 9388, 2011 – 9234, 2012 – 9043, 2015 – 7772

Source: www.diagnoza.com [accessed: 2.11.2019].

The percentage of people declaring frequent feelings of helplessness or other negative emotions when dealing with some official matters decreased from 10.4% in 2000 to 4.3% in 2015 (Chart 2). Also, the number of people who declared that they had experienced similar emotions decreased over time (from 47.8% in 2000 to 34.9% in 2015). Unfortunately, a situation in which almost every second person claims that they have felt powerless and humiliated might be a proof of bureaucracy phenomenon. It seems comforting that in the years 2000-2015 percentage of respondents who declared that they had never felt powerless nor humiliated increased from 41.9% in 2000 to 60.9% in 2015.

These arguments seem to confirm the bureaucratic phenomenon in Poland. It manifests itself in a noticeable impediment when carrying out an official matter. Another study that could submit to this statement presents the level of complexity of administrative procedures [Omyła-Rudzka 2015]. Most Polish residents (55%) finds submitting a PIT declaration easy, but almost every third resident (30%) admit that filling out the tax form is difficult. It may indicate a high degree of complexity involved in this procedure. Thus, it remains a challenge for public institutions in the upcoming years to ensure that all procedures remain fully understood and are not associated negatively.

The study on the expected systemic changes in Poland [Badora 2015] shows that 6% of respondents expect reforms in the public administration. People drew their attention in particular to limiting bureaucracy and the number of clerks and improving public institutions' performance (4%), as well as increasing the liability of clerks for wrong decisions (1%). It leads to the conclusion that next to other systemic problems, those regarding public administration are highly important. The very fact that they are noticed and highlighted by the survey's participants deserves reflection in terms of more in-depth cognitive activity as well as significant systemic changes.

## **5. Imperfect community**

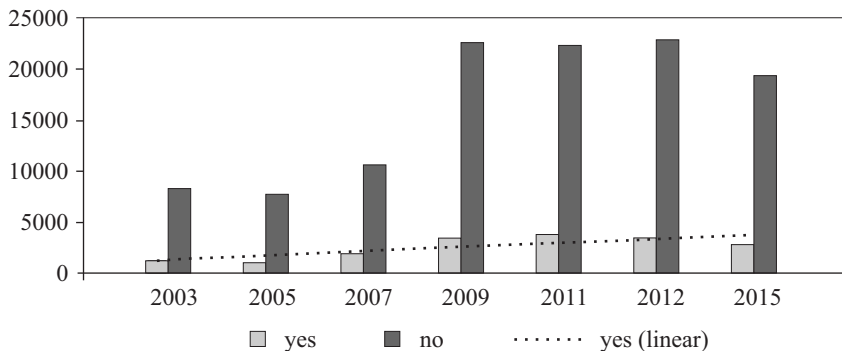
The community was a fundamental issue for the majority of social science researchers. However, the author, whose findings seem to be the most important for this analysis, is Jean Jacques Rousseau. His concept of the social contract [Rousseau 2007] is based on values of equality and mutual trust. These, in turn, are related to the direct citizens' involvement in social issues, such as common good activities. This type of commitment enables us to build the so-called civil society, which could be the basis for reflections on the imperfect community.

Participation in Elections is an indicator of civic involvement. Many researches confirm that declared participation in elections is always higher than in reality. Most Polish people who took part in the survey indicated that their participation

in national or local government elections increased in the analysed period (from 2007 to 2015) from 63.5% in 2007 to 70.5% in 2015 [*Social Diagnosis* 2019]. In contrast, peoples' real involvement [Krajowe Biuro Wyborcze 2019] in local government elections was at the level of 53.9% in 2007 and 47.3% in 2010, 48.8% in 2018, similarly as for parliamentary elections (47.3% in 2010, 49.1% in 2015, 45.9% in 2019). It suggests that respondents could be rather isolated from society, and they are not willing to co-decide about the future fate of LGUs nor the country.

Undoubtedly, a more direct indicator of civic engagement is declared membership in organizations, associations, committees, etc. (Chart 3). Membership in an organization/association could be perceived, unlike participation in elections, as a truly prosocial behaviour itself.

Chart 3. Membership in an organization/association (declared)



*n* in: 2003 – 9560, 2005 – 8769, 2007 – 12486, 2009 – 25932, 2011 – 26107, 2012 – 26311, 2015 – 22173

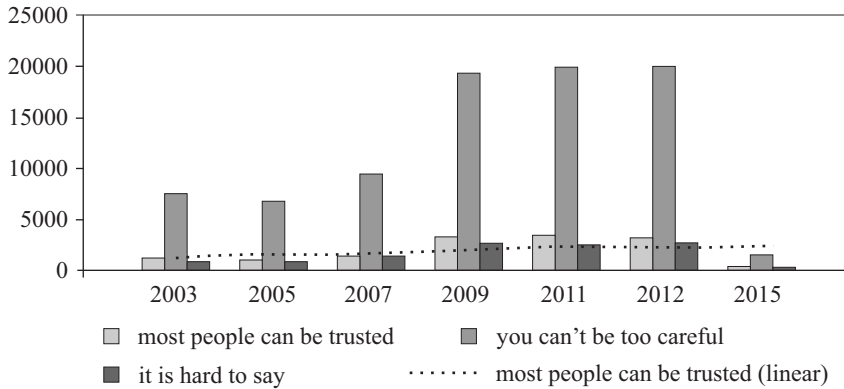
Source: [www.diagnoza.com](http://www.diagnoza.com) [accessed: 2.11.2019].

The level of civic involvement of Polish society can be considered as minimal. Over analysed period (2003-2015), only every tenth person declared a direct involvement in various organizations, associations, etc. (from 12.1% in 2003 to 12.7% in 2015) (Chart 3). The vast majority of respondents remain passive in this area. This trend remains at a constant and very high level (from 87.9% in 2003 to 87.3% in 2015).

Another crucial imperfect community indicator is direct participation in a public meeting (excluding a meeting at work). Percentage of respondents declaring their participation in a public meeting during the period from 2003 to 2015 decreased from 18.4% in 2003 to 19.4% in 2015 [*Social Diagnosis* 2019]. The vast majority of people declared that they did not participate in this type of activity (from 81.6% in 2003 to 83.5% in 2012). It seems to confirm the low level of social involvement in Poland (positive declarations was gathered from every fifth person

only). Participation in a public meeting is more popular among the respondents than membership in an organization. Higher involvement in this type of behaviour might result from the lack of ability or necessity to undertake long-term activities, or from the lack of identification with a social group.

Chart 4. Trusting others



*n* in: 2003 – 9568, 2005 – 8726, 2007 – 12474, 2009 – 25928, 2011 – 26236, 2012 – 26285, 2015 – 2109

Source: [www.diagnoza.com](http://www.diagnoza.com) [accessed: 2.11.2019].

Undertaking activities for the benefit of civil society is directly related to the social trust (Chart 4). Trusting others remains at an extremely low level, which might affect civil society development. Although, the increasing tendency of trusting other people declared by respondents is observed in the period from 2003 to 2015, change in this dimension of socio-economic life is not very rapid (from 11% to 19.6%). Every tenth person participating in the study is unable to take a position on this matter. It means that the majority of Poles do not trust other people (from 79.7% in 2003 to 77.48% in 2015).

Nevertheless, the percentage of respondents declaring trusting their neighbours has increased significantly from 59.2% in 2011 to 80.8% in 2012 (Social Diagnosis 2019). Therefore, it could be assumed that anonymous persons are not perceived by Polish society as trustworthy (unlike people with whom there is some kind of bond, e.g., family, neighbour, employee). Although it seems to be a natural phenomenon, low level of trust in so-called strangers does not allow Polish society to welcome anonymous persons with open arms. Taking this into account, it should be stated that building a community based on mutual trust requires time and in-depth, intensive interaction between particular social groups. That is why building a civil society is becoming a long-term challenge.

## **6. Conclusions and final remarks**

Social dysfunctions in the local self-government in Poland identified based on the “Report on the state of local self-government in Poland” were examined in this survey and became the stepping stone in developing determinants in the LGU.

Theoretical as well as a bottom-up approach to this research is one form the range and types of possible solutions to the given problem. Access to a broader range of precisely fitted data – in terms of theoretical accuracy – would obviously allow achieving a higher cognitive level of examination. Thus, taking into consideration the presented theoretical concepts, the selection of indicators gathered in this study is not a closed set. Nevertheless, it has been demonstrated in the survey that diagnosed LGUs’ dysfunctions are reflected in social behaviours and social attitudes in Poland. As a result, in the course of the conceptualisation process, based on secondary data analysis, a number of social factors are identified. It led to listing social determinants in the LGUs. In the future, they could require confirmation in the field of in-depth quantitative analyses with a particular focus on the direction and intensity of cause-effect relationships.

The basic social determinants in the local self-government at the mesostructural and microstructural level include:

- social assessment of local government authorities,
- social assessment of public investments (including public nuisance investments especially, e.g., waste incineration),
- social preferences in the field of public investments,
- local community participation in public investment (at both financial and personal levels),
- joint responsibility of the local community for public investments (e.g., through involvement in the decision-making process),
- public consultation process for any public investment,
- intelligible administrative procedures,
- LGUs’ employees availability for a vast community (shortening the distance especially to the staff with a higher level of substantive and decision-making responsibility),
- level of responsibility of LGUs’ employees for decisions (financial in particular),
- level of local community involvement,
- level of local community trust to others,
- level of local community identification with LGUs activities.

Previous research experience provides equally cognitively stimulating social factors that could complement those mentioned above:

- transparency and clarity of investment procedures,
- shaping attitudes and opinions of the local community through social engineering techniques,
- local community involvement in the decision-making process [Bartłomiejski 2009].

When elaborating on social dysfunctions in the local self-government, one cannot ignore demographic factors, which will, in the nearest future, force national government along with local governments to imply crucial economic and social changes in Poland. Changes that take into account the tendency that Western societies' authorities have had to face for some time ago.

The dynamics of socioeconomic life is based on relations and interactions. Hence, the number of social factors that could affect the organization such as LGU seems to be unlimited, and certainly not entirely controllable. At this stage of research, especially, it is difficult to indicate factors relevant to the subject of these considerations clearly. Thus, in the nearest future, it is necessary to undertake a research within building up a statistical model regarding the local government units' level based on their determinants, including those of social nature. It seems that determinants of the most significant impact on local self-government could be selected based on factor analysis during the next survey.

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## Przyczyny społecznych dysfunkcji samorządu terytorialnego

**Streszczenie.** *O turbulencji uwarunkowań funkcjonowania samorządu terytorialnego w Polsce świadczy szereg dysfunkcji zidentyfikowanych i szczegółowo scharakteryzowanych w literaturze przedmiotu. Choć pogłębiona analiza funkcjonowania wszystkich szczebli samorządu terytorialnego w Polsce pozwala na rozszerzenie listy tych dysfunkcji, wielu badaczy podkreśla konieczność wskazania przyczyn tej rzeczywistości społeczno-gospodarczej. W artykule zwrócono uwagę na jedną z możliwych interpretacji zagadnienia, biorąc pod uwagę kluczowe ustalenia z zakresu nauk społecznych, ze szczególnym uwzględnieniem ekonomii i finansów, pogłębiając tym samym determinanty dysfunkcji społecznych JST, m.in. autokratyczną, biurokratyczną, niedoskonałą społeczność. W pracy wskazano, że to bezpieczeństwo ontologiczne (pracowników samorządowych szczególnie), a także świadomość dyskursywna, mogą być jednym z istotnych źródeł większości dysfunkcji samorządu lokalnego w Polsce. Podkreślono także, że udział obywateli na każdym szczeblu życia społeczności lokalnej, w tym na szczeblu samorządowym, jest czynnikiem m.in. dynamizującym działalność samorządu terytorialnego. W zakończeniu zaproponowano szereg sposobów wzmocnienia demokracji samorządowej, korespondujących z częścią teoretyczną badania, w tym na podstawie drabiny partycypacji obywatelskiej Arnsteina. Praca ta jest komplementarna wobec współczesnych badań nad samorządnością terytorialną, a wypływające z niej konkluzje stanowią obszerny zbiór dla przyszłych analiz w oparciu o dane pierwotne.*

**Słowa kluczowe:** samorząd terytorialny, jednostki samorządu terytorialnego, dysfunkcje JST, bariery społeczne, biurokracja, determinanty samorządu terytorialnego



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# **Optimization of the Working Capital of Industrial Corporations According to the Criteria of Economic Evaluation of Synergetic Development Effects: Models, Methods, Tools**

***Abstract.** The article presents theoretical and methodological principles of the development of industrial corporations proposed by the author and illustrated in the context of the machine building sector. The author focuses on the application of synergy effects, which are seen as the most promising factor in terms of specific development of corporations and integrated corporate structures. A method for estimating the economic effect of synergy for machine-building corporations is proposed, which is based on the analysis of additional income from an innovation project, taking into account the initial cost of fixed assets and the cost of the innovation project as a whole. The author shows that the method could help to accelerate the innovative development of machine-building corporations.*

***Keywords:** corporation, economic development, industry, models, optimization, synergy, working capital*

## **1. Introduction**

The efficiency of corporations is closely linked to their development potential. The basis of the progress of the joint-stock sector of Poland and Ukraine is its transformation into corporate structures. The practice of their formation testi-

fies to the existence of a number of problems that hinder the effective functioning of such organizational entities. In the post-soviet camp countries, these forms of enterprise management were unknown. As a result, there were no theoretical foundations for the management of such organizational entities, and theoretical and applied models of management. The formation of methodological and applied developments will help increase the efficiency of corporations and its dynamic development.

The following domestic and foreign scientists have made a significant contribution to the development of corporate theory, methodological and applied foundations of corporate governance. In scientific works the problems of functioning the corporations are investigated, their essence is revealed, principles and mechanisms of their management are considered, conditions, structure and features of their formation and maintenance in the conditions of transition and market economies, etc. are analyzed. However, the obtained scientific results do not fully take into account the factors of development of machine-building corporations. In particular, there are no methods have been developed to assess the economic efficiency of machine-building corporations, which allow to draw comprehensive conclusions about the success of their operation, and no approaches have been proposed to calculate the synergy effect in corporations.

The concept of synergetic is popular in modern economic research, economics and management sciences. This is due to the fact that synergetic, as a concept, phenomenon and process, comprehensively and to the greatest extent characterizes the economic, managerial processes that are the results and consequences of development of corporations, mechanisms, systems and technologies of joint-stock companies. Therefore, various scientific schools are created that try to solve various problems of industrial corporations, in particular machine-building, as such, which often represent the corporate economy, joint-stock and corporate sectors of national economies within the theory and on the basis of synergy. One of the issues that their representatives are working on today is the problem of determining the synergistic effect of the creation (development) of corporations. By the way, here we believe that a corporation is a legal form of business that is different and separate from the specific persons who own them. The derivative terms from “a corporation” usually refer to phenomena, that is often relate to joint-stock companies and business associations.

The need to solve the outlined problems taking into account the specifics of corporate enterprises determines the relevance of research and development the recommendations for economically sound development of machine-building corporations based on improving their organizational and management structures and more fully taking into account the synergy effect in all their activities.

## **2. Analysis of publications of the problem**

Recently, many domestic and international scientists made a significant contribution to the study of the problems of development the theory of synergetics and the synergistic approach. For example, they considered the concepts of synergy and synergetic, outlined the horizons of their application in economics, management and administration, revealed the principles, features of the theory of synergetic and synergistic approach, investigated the problem of assessing the synergistic effect, etc. At the same time, the question of determining the effect of synergy from the development of corporations is insufficiently studied. This is due to the fact that only methods have been developed to assess the impact of synergies on the activities of industrial and machine-building corporations in particular. These methods, as a rule, do not provide for the application in the complex of conceptual provisions and methods of synergistic approach to assessing the impact of synergies on their activities in the context of joint-stock companies management. Therefore, they cannot be effective in practice or in the process of determining the synergistic effect of corporate development.

At the same time, neglecting the tools of corporation management in machine-building makes economically efficient management system, development of enterprises on the basis of synergy, the corporate sector of the national economy impossible.

In the scientific literature there are concepts and methods for studying the stages, trends and results of the development of complex systems, which are appropriate to interpret machine-building corporations. Concepts and methods form the basis of evolutionary theory, cybernetics, theory of synergetic. Evolutionary theory, which does not take into account the transitional and revolutionary processes of systems development, is essentially no different from the approaches of cybernetics. Therefore, the former should be considered as part of the latter.

The essence of cybernetics is that the development of systems is seen as an equilibrium and self-regulating process that can be interpreted as inverse or inverse.

The theoretical basis of the synergistic approach is the results of analyzing the nature and potential of cooperation, during which there is interaction, coordinated cooperation between individuals with the same and common interests. Economic processes are divided into dissipative and equilibrium [Adachi 2012: 65-66; Brown & Taylor 2004: 52]. Into the equilibrium systems, the development is impossible. Only dissipative have the ability to develop. And the further the development process is from equilibrium, the more effective it is.

This approach differs from the usual one for classical economic theory. The basics of the evolution of market laws are represented by dogmas, paradigms and paradoxes of achieving equilibrium. The approach, considered by Lorraine Talbot [2019: 115-117], calls into question the effectiveness of the principles of control of systems that take into account the principles of cybernetics. Confidence in the principle that the main task of management is to create tools that compensate for and neutralize the effects of disturbances on the objects of management has been especially undermined. Instead, Talbot claimed that perturbations develop systems [Talbot 2019: 125].

Shann Turnbull proposed to analyze the development of complex and self-organization of open systems based on a synergistic approach. The main postulate is the position in which the imbalance is created and maintained by the flow of resources from the external (exogenous) environment. Imbalance leads to the creation of complex and stable structures of systems, to self-organization. Systems develop due to imbalance and self-organization [Turnbull 2020: 185].

The results of research by Turnbull and Talbot is differ. However, they analyze similar phenomena and processes. They have scientifically proved that the coordinated coherent action of different forces under certain conditions can manifest itself in the effects of emergence, animation, synergy, and so on. The effects contribute to the development of systems, providing transformations of their states [Talbot 2019: 125; Turnbull 2020: 185].

The consequence of the application of a synergistic approach is the expansion of the categorical-conceptual apparatus of modern economic theory by supplementing the concept of synergistic development. This is a universal category for describing the transformations of states of heterogeneous economic systems during development, which occur in quasi-stationary, transient and stationary modes of operation, during crises, in unstable states, which lead to dualistic decisions. The well-known signs of synergism from the development of systems are the presence of structural (qualitative), phase transformations of their states, uncertainty, nonlinearity, inversion, no equilibrium [Torre 2019: 328-329].

The author believes that synergistic development is a category for describing the progress of homogeneous systems created by the integration of elements, which causes substitution (natural changes or metamorphoses, artificial transformations or transformations) of states of systems that are the main cause of synergism. Substitution or mutation is an integral part of evolution, "moving forward," the development of systems. In contrast to the existing ones, in the proposed definition the word "heterogeneous" is replaced by the word "homogeneous," the synergism from the development of systems is due to the synergistic effect, the other effects are not taken into account.

Heterogeneous economic systems are complex. They are formed from a different elements. The latter are differentiated by criteria. Homogeneous are formed

from homogeneous, with similar or similar properties. The development of machine-building corporations on the basis of the theory of synergetic, synergistic approach can take place under the observance of the following conditions by the participants of corporate relations. This is the construction and improvement of homogeneous management structures. Their implementation necessitates a change in characteristics of the systems.

Now the synergy of the development of machine-building corporations, most of the experts in economic theory and corporate governance understand such features of enterprises as the transformation of their states, the ability to develop evolutionarily and revolutionary, with manifestations of ambivalence, multiphase, emergence, consistency, multiple and systematic changes in phase portraits. These manifestations lead to the effect of synergism, increase in the number of elements, complication of systems, changes in intensity and forces, redistribution of connections [Keay 2012: 217-218].

The basics of cybernetics and synergetic are similar. This is the concept of dynamics and methodology of self-organization of systems. The concepts themselves are different. If the basis of cybernetics is general theory of control of equilibrium systems, then synergetic – no equilibrium.

The disadvantage of research on the synergistic effect of the development of machine-building corporations is that it is analyzed not in terms of the faces of the prism, not in the plane of its inherent types, but in the context of others.

The main reason for the synergy effect from the development of machine-building corporations is the metamorphosis and transformation of organizational management structures. The management structures include services, departments and participants in corporate relations, types of economic, operational activities of enterprises. “Immediate” determination of the effect, in particular from the development of corporations, is unlikely, because its essence is complex.

The classic typology of synergistic effects from the development of machine-building corporations shows that, in addition to the primary effects, it is necessary to distinguish between derivatives. Secondary ones usually concern the operating activities of machine-building corporations. Only after analyzing the features of economic and operational activities of enterprises, the problems of their progress, identifying typical effects that may occur and generalizing the results, it is appropriate to proceed to the calculation of the effect of corporate development.

If we analyze the differences between machine-building corporations and business associations based on the use of synergy theory, it follows that corporations are complex functioning organizational and economic systems with synergies from development and synergistic effects as common features of enterprises.

Machine-building corporations protect and provide protection to enterprises, and thus, protect participants in corporate relations from the negative effects of the business environment. The protection is natural, and protection is an artificial

reaction of systems to an aggressive environment. Due to the delegation of tactical management functions, the state of enterprises is being transformed.

The result of transformations of the states of machine-building corporations is a revision of their organizational and economic essence. The enterprises have not only exogenous, one-sided connections, but also those that are designed to metamorphose, transform the endogenous environment. The improvement and development of corporate relationships with internal, intra-firm environments, usually initiated by intra-firm participants in corporate relations, encourage the transformation of systems of interaction with the external one. The enterprises have the opportunity not only to respond to actions, metamorphoses and transformations of the environment, but also to predict and influence them. By the way, the development of corporations, quantitative changes and transformations of the internal environment lead to qualitative: improvement of management systems, improvement of the environment, change of conditions, development of enterprises.

Machine-building corporations by the criterion of “forms of relations of organizational and legal forms with the environment” are a type of enterprises that are transitional, because, incidentally, unlike syndicates, which are exogenous, and holdings that are endogenous, do not have direct relation to exogenous and endogenous.

Given the results, the effective in terms of complexity of the foundation and organizational and legal forms, effectiveness, functionality in mechanical engineering, and those that, in the author’s opinion, should include the following: first place is occupied by joint stock companies, second by corporations, third – holdings.

The principles of synergetic contain conceptual provisions and methods of dialectics, principles of theories of self-organization and systems, cybernetic and processional-structured approaches. They also cover the provisions and methods of situational theory, cybernetics, and situational approach. The main advantage of the direction of economic synergetic is that it describes on a scientific basis not only inverse quantitative but also qualitative processes.

The advantages of the direction include the fact that economic synergetic can explain:

- the emergence of the phenomenon of corporation in the economy, the reasons for their creation;
- the stages and processes of scientific and technical, industrial, organizational and economic and socio-economic evolution of corporations;
- the appearance of phenomena and the processes of corporate governance, corporate management in the economy, the reasons for their occurrence;
- the general trends and main problems in the progress of corporations, the reasons for changes in organizational and legal forms, the spread of corporate pro-



cesses, features of a business processes of enterprises, the development of joint-stock companies and integrated corporate structures;

– the base problems, directions and prospects of education for corporations, integrated corporate structures, corporate and non-corporate economy, joint-stock and corporate sectors of national economies of managers, economists and managers of higher qualification, etc.

The direction makes it possible to study and explain the listed phenomena, processes both in general and at the example of industry, such as machine-building subsectors, and the other.

Signs of the imperative of development from the standpoint of synergetic, in particular machine-building corporations, shown below in Table 1, are proposed and quite successfully, in the opinion of the author.

Table 1. The characteristics of the imperative of development of machine-building corporations from the standpoint of synergetic

Imperatives	Theory of synergetic
Reasons	Nonlinearity, uncertainty, non-equilibrium, inversion, nonlinear environmentalism
Forms	Stationary and non-stationary regimes, phase, structural, qualitative transitions, crises, catastrophes, bifurcation, fluctuations
Properties	Self-organization in the form of nonlinear environmentalism, deterministic chaos, equal probability of deterministic and stochastic states during bifurcation
Factors	Hierarchy, positive (developing) feedback, cooperation, autocorrelation
Methods	Modeling based on theories of catastrophes, bifurcations, phase transitions and methods of fuzzy logic, artificial neural networks, chaos, fractals, etc.
Results	
Intermediate	Taking into account the reasons, the use of forms and properties, taking into account factors, the application of these methods*
Final	Many possible states, different trajectories of development
Consequences	
Intermediate	Taking into account the causes, the use of forms and properties, taking into account the factors, the application of these methods allows you to predict many possible states and different trajectories of development, equilibrium, and invariance*
Final	Obtaining many possible states and different trajectories of development*

\* Suggested by the author.

Source: based on Fadeyeva 2012: 185-186.

Using the conceptual provisions of the theory of synergetic, I. Fadeyeva [2012: 213] proposed a method for estimating the presence of the phenomenon of synergism using the coefficient of synergistic action (1):

$$\alpha = \frac{\beta - \chi}{\delta - \varepsilon} \tag{1}$$

where:

- $\alpha$  – the coefficient of synergistic action;
- $\beta$  – a general economic assessment of the synergy effect, monetary units (m.u.);
- $\chi$  – the cost estimation of expenses for achievement of effect of synergy, m.u.;
- $\delta, \varepsilon$  – the values of indicators that correspond to the established mode of operation of the object of study.

According to Fadeyeva [2012: 214-215], if  $\alpha = 0$  (2), then synergism is absent in the system and if a positive effect is observed, then  $\alpha > 0$  (3). Naturally, if  $\alpha < 0$  (4), then anty synergism is observed.

The effect of synergism can be determined on other grounds, based on the law of the synergism. The author finds confirmation of fidelity of scientific thought by M. Bondarchuk [2013: 35-36]. For the production and economic structure, “which is a machine-building corporation,” there is a set of elements in which its potential is greater or less than the potential of individual elements. The law of synergy reflects the presence of a systemic effect, when a system from a simple sum of elements is transformed into a system that has a new quality.

More over Bondarchuk [2013: 24-25] believes and claims that the synergy can provide the machine-building corporation with a positive net acquisition cost as (5):

$$\phi = \varphi - [\gamma - \eta] - \iota - \kappa \quad (5)$$

where:

- $\phi$  – the positive net acquisition cost of corporation, m.u.;
- $\varphi$  – the combined value of corporations, m.u.;
- $\gamma$  – the valuation by corporation of its own value, m.u.;
- $\eta$  – the market value of shares of corporation, m.u.;
- $\iota$  – the premium paid by corporations (one to another), m.u.;
- $\kappa$  – the cost of acquisitions of corporations, m.u.

In this case, she argues that if expression (5) is converted into

$$\phi = [\varphi - (\gamma + \eta)] - (\iota - \kappa) \quad (6)$$

then the value in square brackets reflects the synergistic effect [Bondarchuk 2013: 32].

There are the other methods of calculating the effect of synergy, in particular from the development of corporations, including in industry and engineering. They mostly concern the definition of methodological essence of synergism effect. These methods of calculating the synergistic effect have a number of disadvantages. The main shortcomings of the methods of calculating the effect of synergism from the development of machine-building corporations, the author proposes to include the following:

- the definition of “established mode of operation of the object of study” is debatable. It is unclear what is meant – the capacity of machine-building corporations, the actual volume of manufactured products and so on. It is impossible to establish the numerical value of the synergistic coefficient without the specified indicator;
- it can be applied retrospectively when enterprises have been integrated into machine-building corporations and the actual values of the obtained financial results are known (at least the market value of the joint-stock companies). However, it is mostly impossible to use them to predict the numerical value of the synergistic effect;
- does not explain the essence, does not provide a method of determining the indicator “overall economic assessment of the synergistic effect”, which, by the opinion of the author, is more important than the synergistic effect, as it should determine the value of the assessed effect;
- it is unclear how in practice to determine the combined value of two and/or more enterprises that create machine-building corporations. The market value of enterprises will depend on the actual, and if the forecast value is determined, the expected profitability of the formed machine-building corporations. Profitability, in turn, will depend on the importance of the synergistic effect caused by the development of machine-building corporations;
- reveal to a greater extent the essence of the synergistic effect;
- the synergistic effect is considered from the standpoint of enterprises as systems, without separating their components – operating, financial and investment systems, which, in our opinion, in the development of machine-building corporations will change differently. To quantify the effect, it is desirable to consider separately the types of activities and then determine its generalized value.

### **3. The purpose of the article**

The purpose of the article is to propose an author’s method for determining the effect of synergy from the development of corporations at the example of machine-building. The main tasks due to the purpose of the work are analysis, logical generalization and taking into account the existing experience of determining the synergistic effect, guidance and testing of the author’s proposed method of calculating the synergistic effect from the development of machine-building corporations.

### **4. Research methodology**

The object of research is the process of determining the effect of synergism from the development of industrial corporations, the subject – the theory of syn-

ergetic and methods of calculating the synergistic effect for joint-stock companies in machine-building. The methods of analysis (documents and situations), hypothetical, economic and mathematical modeling, concretization, synthesis, systematization, generalization, principles of synergistic approach are applied in the work.

## 5. Presentation of the main results of the research

The author's method of determining the effect of synergy from the development of machine-building corporations is based on the principles, that is below in Table 2, namely the consolidated positive and negative sides, which, in our opinion, are inherent in the process of joint-stock company development.

Table 2. The main properties of the development process  
of machine-building corporations

Properties	
positive	negative
Concentration of capital of enterprises strengthens the effect of scale, promotes the education of scientific intelligentsia, economists, managers and managers of the highest qualification, the accumulation of intellectual capital, the development of innovation and joint-stock companies	Leads to the monopolization the market by joint-stock companies
Improves the competitive conditions for the development of joint-stock companies in relation to international competitors	Creates conditions for the establishment of joint-stock companies monopoly prices for products

Source: own elaboration.

In order to confirm or definitively refute the relevance of the development of machine-building corporations on a scientific basis, it is necessary to assess the benefits that will arise and the possibility of reducing the negative properties of the process.

An accomplished and indisputable fact is that in the process of development of machine-building corporations there will be an effect of scale. There is no doubt that the concentration of capital of enterprises will contribute to the training of scientific intelligentsia, economists, managers for engineering corporations and senior management, the accumulation of intellectual capital, its commercialization, the progress of innovation and the joint-stock companies, their evolution on an innovative basis play an important role. This fact, in the author's opinion, is

more important than obtaining the effect of scale from the development of machine-building corporations.

A common factor that negatively affects the development of innovation by industrial corporations and joint-stock companies is the lack of funding. This is relevant for most of the Polish and Ukrainian machine-building corporations. In different periods and in different countries the problem of deficit of financing of innovative activity of the enterprises was solved differently. For example, they created special funds to finance innovation activities by recalculating part of the profits of enterprises, allocated funds from budgets or other sources in the form of grants for it. A popular method for machine-building corporations is to attract and use their own funds.

The advantage of industrial corporations using their own funds over those involved in the development of innovation and joint-stock companies is that the concentration of capital allows companies to plan and implement the most optimal options for educating scientific intelligentsia, economists, managers and senior management, accumulation of intellectual capital, development and machine-building corporations.

Thus, if a certain industry is represented by a certain number of enterprises, each of which has relatively identical annual indicators of efficiency of production and economic activity, then to implement innovative projects that are most attractive to the industry, business owners must allocate for these purposes, and its management – rationally use the appropriate amount of money (denote the cost of the project). Then, if each of the companies will develop projects independently, independently of each other for non-external funds, it is likely that each company will spend more than a calendar year on their implementation. This is a negative point, because over a long period of time, innovations developed by enterprises may lose relevance not only for them but also for the market. Competition will unfold and be conducted only between these enterprises. This will lead to the loss of the effect of replication of innovations by enterprises.

If companies simultaneously produce and make a joint management decision to establish industrial corporations based on them with the appropriate consolidated indicators of efficiency of production and economic activities, then under such conditions, it is likely that joint-stock companies will finance innovative projects during the calendar year from their own funds. The cost of the projects will be less than the amount of profits that industrial corporations will receive from their implementation.

Thus, first of all, the development of machine-building corporations contributes to the concentration of capital. This makes it possible to accelerate the implementation of various and the joint innovative projects. Secondly, competition between enterprises that are part of machine-building corporations is disappearing. The focus is on the development and competition between machine-building

corporations, representatives of the corporate sector of the national economy of Poland and Ukraine and international competitors. Thirdly, there are conditions for enterprises to replicate innovative projects. The latter reduces their cost, which creates the conditions for obtaining a synergistic effect from the development of machine-building corporations.

To explain the nature and reasons for the formation of the effect of synergy from the development of machine-building corporations, it is advisable to determine the effectiveness of fixed assets of enterprises that are part of the joint-stock companies, and directly the effectiveness of fixed assets of corporations themselves. To do this, apply the efficiency ratio of fixed assets, which is calculated as (7):

$$\lambda = \frac{\mu}{v} \quad (7)$$

where:

- $\lambda$  – the coefficient of efficiency of fixed assets of the corporation;
- $\mu$  – the profit received by the corporation, m.u.;
- $v$  – the initial cost of fixed assets of the corporation, m.u.

It is obvious that in the first case it is appropriate for machine-building corporations to implement innovative projects when the efficiency of their production and economic activities will increase. Hypothetically, the efficiency ratio of enterprises that are part of machine-building corporations, after the implementation of projects will be a specific and positive value for enterprises. So, then we need to calculate the sum of the synergy effect from the development of machine-building corporations, the cause of which is their creation.

In order to continue the calculation of the synergy effect from the development of machine-building corporations, it is necessary to determine additional indicators related to innovative projects – this is the time of their development by enterprises and additional profits that will be received by joint-stock companies from their implementation.

The term of development of innovative projects by machine-building corporations can be determined by the next formula:

$$o = \frac{\pi}{\varpi} \quad (8)$$

where:

- $o$  – the period of development of the project by corporation, years;
- $\pi$  – the cost of the project of the corporation, m.u.;
- $\varpi$  – the cash flow that the owners of the corporation need to allocate, and the management of enterprise to use rationally for the project (in our case,  $\mu$ ), m.u.

It should be noted that from a theoretical point of view in this case, the period of development of innovative projects by enterprises that are part of machine-building corporations will be less than a calendar year. We also take into account that the author's method of calculating the magnitude of the synergistic effect from the creation (development) of machine-building corporations involves taking into account only the exact values of the obtained indicators. It means that the received period of time of realization of innovative projects cannot be rounded up to the whole value of the month.

The additional profit that will be received at one of the enterprises, which is part of the machine-building corporations after the implementation of innovative projects can be determined by the expression (9):

$$\theta = (v + \pi) \times (\vartheta - \lambda) = (v + \pi) \times \rho \quad (9)$$

where:

$\theta$  – the additional corporation profit that will receive after the project implementation, m.u.;

$\vartheta$  – the efficiency ratio of the corporation that is part of the machine-building corporation after the project implementation;

$\rho$  – the increase in the efficiency of the fixed assets of the corporation.

Thus, after mastering innovative projects, enterprises that are part of machine-building corporations begin to receive additional profits, the total amount of which will correspond to the value of the synergy effect from the development of joint-stock companies.

The author proposes the following formula for calculating the effect of synergy from the development of machine-building corporations (10):

$$\sigma = \theta \times o \frac{\sum_{\zeta=1}^{\xi} (\zeta - 1)}{(\zeta = 1)} \quad (10)$$

where:

$\sigma$  – the effect of synergy from the development of the machine-building corporation, m.u.;

$\zeta$  – the number of enterprise that are the part of the corporation and which have implemented innovative projects.

From formula (10) it is seen that the indicators that most influence the value of the synergistic effect from the development of machine-building corporations are the value of additional profits and the number of enterprises that are part of the joint-stock companies. In turn, the value of the indicator of additional profits of enterprises depends on the cost of innovative projects and their efficiency.

Table 3. The indicators of efficiency of machine-building corporation

Indicators	Sum
The initial cost of fixed assets of the enterprise, m.u.	3200
The volume of products sold by the enterprise, m.u.	8400
The profit received by the enterprise, m.u.	480

Source: own elaboration.

In order to explain the mechanism of formation of the synergism effect from the development of machine-building corporations, to test the author developed and proposed in the method of its definition in practice, consider the following example. We suppose that the engineering industry of Poland and Ukraine is represented by five enterprises that are the same or different in organizational and legal forms, but each of which has relatively identical annual indicators of efficiency of production and economic activities, listed below in Table 3.

To implement an innovative project, which is the most attractive for the engineering industry, its owners need to allocate the company, and its management – to rationally use near 1500 m.u. Then, if each of the companies will independently develop projects for their own money, then, in this case, each of them will spend more than 3 years on their implementation, which is a negative point, which is described above by the author.

Now suppose that five companies simultaneously developed and adopted a joint management decision to create on their basis a machine-building corporation with consolidated annual indicators of efficiency of production and economic activity, which are given below in Table 4.

Table 4. The indicators of efficiency of machine-building corporation

Indicators	Sum
The initial cost of fixed assets of the enterprise, m.u.	16000
The volume of products sold by the enterprise, m.u.	42000
The profit received by the enterprise, m.u.	2400

Source: own elaboration.

Therefore, as we can see from the Table. 4, under such conditions, machine-building corporations can finance with their own funds the implementation of innovative projects during the calendar year, as their value is less than the amount of profits that joint-stock companies will receive from the implementation of projects.

To explain the essence and reasons for the formation of a synergistic effect from the development of machine-building corporations, we use the previous example. First of all, we determine the efficiency of the use of fixed assets of enterprises and machine-building corporations. And since it is advisable to implement



an innovative project when the efficiency of its production and economic activities will increase, in this case, the author assumes that the efficiency ratio of the enterprise, which is part of the machine-building corporation, after the project will be 0.2. In the future it is necessary to calculate the amount of the synergy effect from the development of the machine-building corporation.

We will continue the explanation of the mechanism of formation and calculation of the synergy effect from the development of machine-building corporations by determining the values of indicators of the term of development of innovative projects and additional profit that will be received by joint-stock companies from their implementation in enterprises based on continuing use and consideration of the previous example. If we substitute the numerical values of specific indicators in formula (8), we obtain that the duration of the development of an innovative project at one enterprise, which is part of the machine-building corporation, will be 0.625 years or 7.5 months.

Substituting in expression (9) the numerical values of specific indicators, we obtain that the additional profit of the enterprise will be 19.58 m.u. per month or 235 m.u. in a year.

If we substitute the values of specific indicators in formula (6), we obtain the total amount of synergistic effect from the development of the machine-building corporation on the basis of the introduction of joint ventures by joint ventures, which will be 14687.50 m.u.

At the same time, the problems of this method arise when calculating the value of additional synergistic profit, which is not always possible to calculate.

Accordingly, we propose to use another method of calculating the synergy effect. It is based on the calculation of additional profitability of funds invested in the investment project, obtained from the joint activities of members of the corporation. This method proposed to determine the synergistic effect of the activities of corporations (for example, the holdings in machine-building) by analyzing the results of the implementation of innovative projects in corporate associations. It is proposed to calculate the additional return on funds invested in the investment project by the following expression:

$$\tau = v - \omega \quad (11)$$

where:

- $\tau$  – the additional profitability of funds, that was invested in the investment project (its the participant of corporations, which arises as a result of joint implementation of the project);
- $v$  – profitability of the participant of corporations, which arises after the joint implementation of the investment project;
- $\omega$  – profitability of the participant of corporations, which arises before joint realization of the innovative project.

Accordingly, the average additional return on investment in the investment project, all participants in the corporations, which arises from the joint implementation of the investment project by the participants of the holding, will be calculated as (12):

$$\xi = \frac{\sum_{\psi=1}^{\psi} \xi}{\xi_1} \quad (12)$$

where:

- $\xi$  – the average additional profitability, invested funds in the investment project, all of participants in corporations, which arises as a result of joint implementation of the investment project;
- $\psi$  – the number of the enterprise, which is part of the holding in machine-building, and which implemented an innovative project;
- $\xi_1$  – the total number of enterprises included in the holding in machine-building.

The profit of the holding in machine-building, which implements by the investment project, taking into account the calculated values synergy effect, it is proposed to calculate by the next expression:

$$\alpha_1 = \sum_{\psi=1}^{\psi} \sum_{\beta'_1=1}^{\beta'_1} \times \left( \frac{\chi_2}{\left(1 + \frac{\delta_2}{100}\right)^{\varepsilon_2}} \right) \times (\xi + 1) \quad (13)$$

where:

- $\alpha_1$  – the profit of the holding, taking into account the effect of synergy, which implements the investment project, m.u.;
- $\beta'$  – the total duration of the innovation project, years;
- $\beta_1$  – the number of the period of time in which the profit was received;
- $\chi_2$  – the profit of individual participants of the holding, received during joint activities, m.u.;
- $\delta_2$  – the inflation rate, per cent.

The expression (13) is calculated as the sum of profits, that received from the joint activities of members of the corporation discounted by the inflation rate in a particular period of time. In addition, the formula (13) reflects the increase in machine-building holding profits due to the synergistic effect.

From the expression (13) it is seen that the main indicators that affect the value of the total profit of the holding are the profit of individual enterprises of the holding, the number of enterprises forming the association, inflation rate, duration of innovation project and additional profitability resulting from synergy.

The calculation of this method of additional profitability of funds invested in the investment project is presented below. The additional profitability of funds invested in the investment project of each of machine-building holding participants included in the project were: 4.0%, 6.0% and 3.0%. Accordingly, the average additional return on funds invested in the investment project was 4.33%. Accordingly substituting these data in the formula (13) and using the information from the previous example, we obtain the following value of holding's profit, taking into account the effect of synergy that equal to 15548.53 m.u.

## **6. Conclusion**

Thus, it is determined that the machine-building corporation is a joint-stock company based on the pooling of capital of legal entities and (or) individuals, acquires the status of a legal entity, has limited liability of owners, the possibility of free transfer of property rights within legal limits, forms a collegial management system. the decision taking into account a share of owners in the capital and in connection with specificity of functioning creates opportunities for achievement of synergetic effect from cooperation of participants of corporate relations. Each of their types has a certain ideology of their foundation and development.

From the standpoint of a systems approach, machine-building corporations are essentially complex systems. Analysis of literature sources has shown that their research can be conducted on the basis of evolutionary, cybernetic and synergistic approaches. In essence and methodological means, the evolutionary approach is proposed to be considered a subtype of cybernetic. One of the important features of corporations – enterprises are characterized by a synergistic effect. At the same time, its quantitative definition is practically not given in the economic literature.

The article develops the theoretical foundations of corporate development, which are based on the formation of opportunities to achieve additional synergies. The paper also substantiates the possibility of obtaining an additional effect from the merger of several subjects of corporate relations.

Among other things, the method of determining one of the types of synergism effect that arises in the process of development of machine-building corporations is developed in the work. The proposed method is based on taking into account the possibilities of concentration of capital of enterprises on the basis of which corporations are formed. It is scientifically proved and substantiated on the basis of conducted researches that application of the developed method allows to es-

establish the basic factors influencing size of synergistic effect from development machine-building corporations, possibility to accelerate innovative development of the enterprises and joint-stock company as a whole.

The proposed method on a scientific basis partially reveals one of the manifestations of the synergistic effect of the development of machine-building corporations, as the developed and presented indicator is complex and complex in nature. To more fully explain its essence, it is necessary to study the operational, investment, innovation and financial activities of enterprises.

The method of determining the effect of synergy from the development of machine-building corporations will be useful for both existing and new enterprises with a satisfactory general condition, which implement or develop investment and innovation activities, focused on its evolution by attracting and using their own funds.

Also in the article proposes a methodical approach to determining the economic effect of synergy for a corporations, which is based on the analysis of additional profits from the implementation of an innovative project by the author. The calculation of additional profit is carried out by taking into account the initial cost of fixed assets and the cost of the innovation project as a whole and allows to increase the level of innovation of the machine-building corporations.

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## **Optimalizacja kapitału obrotowego korporacji przemysłowych według kryteriów oceny ekonomicznej synergicznych efektów rozwoju: modele, metody, narzędzia**

***Streszczenie.** W artykule przedstawiono autorskie teoretyczne i metodologiczne zasady rozwoju korporacji przemysłowych na przykładzie sektora budowy maszyn. Skoncentrowano się na zastosowaniu synergii jako najbardziej obiecującej pod względem specyficznego rozwoju korporacji i zintegrowanych struktur korporacyjnych. Zaproponowano i przedstawiono metodę szacowania ekonomicznego efektu synergii dla korporacji produkujących maszyny, opartą na analizie dodatkowego dochodu z projektu innowacyjnego z uwzględnieniem początkowego kosztu środków trwałych i kosztu projektu innowacyjnego jako całości. Dalsze wykorzystanie tej metody w praktyce umożliwi przyspieszenie innowacyjnego rozwoju korporacji budujących maszyny.*

***Słowa kluczowe:** korporacja, rozwój gospodarczy, przemysł, modele, optymalizacja, synergia, kapitał obrotowy*



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# Activities of Cultural Institutions During the COVID-19 Pandemic: a Case Study

**Abstract.** *The purpose of this article is to show the functioning of cultural institutions during the pan-demic. In the theoretical part the author presents an initiative of the Polish Ministry of Culture and National Heritage entitled “Stay at home – art will come to you,” including a list of cultural institutions that take part in it. The practical part contains an analysis of the cultural offering made available online by cultural institutions in Będzin, Lublin and Płock.*

**Keywords:** *cultural institutions, activities of cultural institutions, online cultural offering, pandemic*

## 1. Introduction

Closed to visitors but active on the web, cultural institutions have moved their activities to the virtual world. Quickly adjusting to work in a new reality. They make audiovisual collections available online, organize online events, remind us of the fight against the virus.

Following the pandemic, decisive steps have been taken to stop the spread of coronavirus. The crisis staff together with the Minister of Culture and National Heritage decided to temporarily close cultural institutions in the form of libraries, concert halls, operas, operettas, museums, theaters, cinemas, culture centers and art galleries. schools, universities and artistic education institutions. The official suspension of operations took place on March 12 this year.<sup>1</sup>

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<sup>1</sup> <http://dziennikustaw.gov.pl/DU/2020/403> [accessed: 18.05.2020].

## 2. Cultural institutions on the Internet

In the territory of the Republic of Poland, the majority of the cultural sector is represented by the public sector, which has a non-profit character. Organizational aspects of institutions operating in the area of culture are set out in the Act on the organization and conduct of cultural activities.

The first lines of the Act contain important comments regarding all entities involved in conducting cultural activities. Entities operating pursuant to the Act on the organization and conduct of cultural activities are: theaters, opera, operetta, symphonies, orchestra, cinemas, film institutions, museums, libraries, cultural houses, art centers, art galleries, research and documentation centers.

In connection with the temporary closure of libraries, philharmonics, operas, theaters, museums, cultural institutions run or co-run by the Ministry of Culture and National Heritage have created a rich cultural offer. The offer enables contact with art through online channels. Recipients are encouraged to take advantage of the possibility of visiting, listening to concerts, reading, watching and contemplating art.<sup>2</sup>

The first group of entities presenting the online cultural offer are museums, art centers and galleries. Museums show their collections to visitors, offering virtual walks. Institutions often have a special educational offer with the option of publishing an electronic version, movies and games. This treatment is to attract the youngest. It is also worth following the institution's social media. This is where information about the latest museum offers is posted. The museums that took an active part in the initiative "Zostań w domu – sztuka przyjdzie do Ciebie" (Stay at home – art will come to you) are among others:

- Muzeum Narodowe w Kielcach (National Museum in Kielce),
- Muzeum Narodowe w Warszawie (National Museum in Warsaw),
- Państwowe Muzeum Auschwitz-Birkenau (Memorial and Museum Auschwitz-Birkenau),
- Muzeum Dom Rodzinny Ojca Świętego Jana Pawła II w Wadowicach (Family Home of John Paul II in Wadowice),
- Muzeum Historii Polski (Polish History Museum),
- Muzeum im. Kazimierza Pułaskiego w Warce (Museum of Casimir Pułaski in Warka),
- Muzeum Józefa Piłsudskiego w Sulejówku (Józef Piłsudski Museum in Sulejówek),
- Muzeum Lubelskie w Lublinie (Lublin Museum in Lublin),

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<sup>2</sup> <https://www.gov.pl/web/kultura/zostan-w-domu--sztuka-przyjdzie-do-ciebie> [accessed: 19.05.2020].



- Muzeum Łazienki Królewskie (The Royal Łazienki Museum),
- Muzeum Narodowe w Krakowie (National Museum in Kraków),
- Muzeum Narodowe Ziemi Przemyskiej (National Museum of Przemyśl),
- Muzeum Pałacu Króla Jana III w Wilanowie (Museum of Kings Jan III's Palace at Wilanów),
- Muzeum Pamięci Mieszkańców Ziemi Oświęcimskiej (Residents Memorial Museum – Oświęcimskie Land),
- Muzeum Piastów Śląskich w Brzegu (Museum of the Silesian Piasts in Brzeg),
- Muzeum Stutthof w Sztutowie (Stutthof Museum in Sztutowo),
- Muzeum Polaków Ratujących Żydów podczas II wojny światowej im. Rodziny Ulmów w Markowej (The Ulma Family Museum of Poles Saving Jews in World War II),
- Muzeum Sztuki Nowoczesnej w Warszawie (Museum of Modern Art in Warsaw),
- Muzeum Sztuki w Łodzi (Museum of Art in Łódź),
- Muzeum Zamkowe w Malborku (The Malbork Castle Museum),
- Zamek Królewski na Wawelu (Wawel Royal Castle),
- Centrum Historii Zajezdnia we Wrocławiu (History Centre Zajezdnia in Wrocław),
- Międzynarodowe Centrum Kultury w Krakowie (International Cultural Centre),
- Centrum Sztuki Współczesnej w Toruniu (Centre of Contemporary Art in Torun),
- Zachęta Narodowa Galeria Sztuki (Zachęta – National Gallery of Art).

Theaters, concert halls, operas, operettas form the second group of cultural entities participating in the online venture. The virtual offer is especially addressed to music lovers. Philharmonic and opera activities include registration, broadcast of internet concerts, audio recordings of well-known record publishers, and video coverage of interviews with well-known artists. Cultural institutions that promote online music services are:

- Polska Opera Królewska (The Polish Royal Opera),
- Filharmonia Narodowa w Warszawie (Warsaw Philharmonic),
- Teatr Wielki – Opera Narodowa (Polish National Opera),
- Teatr Wielki w Łodzi (Łodz Grand Theatre),
- Zespół Pieśni i Tańca Śląsk (Silesian Songs and Dance Ensemble).

The last group of cultural entities are research and documentation centers. These institutions deal with the dissemination of knowledge through audiobooks, museum collections and exhibitions. This allows you to reach the largest possible audience – adults as well as the youngest. Currently, the institutes using electronic media are:

- Instytut Adama Mickiewicza (Adam Mickiewicz Institute),

- Instytut Polonika (Polonika – The National Institute of Polish Cultural Heritage),
- Instytut Północny im. W. Kętrzyńskiego w Olsztynie (W. Kętrzyński's North Institute in Olsztyn),
- Narodowy Instytut Architektury i Urbanistyki (National Institute of Architecture and Urban Planning),
- Narodowy Instytut Dziedzictwa (The National Heritage Board of Poland),
- Instytut Teatralny (Theater Institute).

Public television programs and radios also provide a rich cultural offer. Therefore, public television encourages viewers to visit its digital platform. The platform provides 836 titles for free. Among them you can find films and feature series, documentaries, animated series for children and television theater performances. The shared works have been digitized accordingly. Many of them under the project entitled “Digitalizacja Polskiej Szkoły Telewizyjnej i Filmowej z Archiwum TVP S.A.” (Digitization of the Polish Television and Film School from the Archive of TVP S.A.) co-financed by the European Union has been reconstructed by the best specialists in the field of film.<sup>3</sup>

Polish Television has also created an individual offer for children, teenagers and even entire families. Young viewers on TVP ABC channel from 9 am to 1 pm can watch the program entitled “Alchemik” (Alchemist), showing physical phenomena and the program “Zaczarowany świat” (Enchanted world), presenting contemporary art.<sup>4</sup>

TVP Kultura channel in the afternoon broadcasts movies and series from school reading. Examples of movie titles include *Szatan z siódmej klasy*, *Zemsta, W pustyni i w puszczy*. Polish Television Theater as the only one of the public theaters during a pandemic. He presents theatrical plays titled *Widnokrąg*, *Cena* and many other interesting performances.<sup>5</sup>

Polskie Radio (Polish Radio) also provides a rich cultural offer. As part of the action entitled “Wspieramy polskich artystów” (We support Polish artists) public broadcaster antennas broadcast a lot more Polish music, radio plays or programs for children, performed by Polish artists.<sup>6</sup>

In addition to the cultural offer, many radio stations have also created pandemic information campaigns. Polish Radio decided to launch additional programs and a portal to support listeners or conduct educational activities. This action is aimed at reducing the spread of the virus. Polish Radio shows a series of programs

<sup>3</sup> <https://warszawa.tvp.pl/47229040/akcja-zostanwdomu-sztuka-przyjdzie-do-ciebie-mkidn-zacheca-do-korzystania-z-kultury-online> [accessed: 19.05.2020].

<sup>4</sup> <https://abc.tvp.pl/18025423/nasze-programy> [accessed: 20.05.2020].

<sup>5</sup> <https://www.tvp.pl/43861668/teatr> [accessed: 20.05.2020].

<sup>6</sup> <https://www.polskieradio.pl/13/53/Artykul/2477454,Polskie-Radio-wspiera-polskich-artytow-i-obniza-ceny-ich-plyt> [accessed: 20.05.2020].

in which professionals answer the questions of listeners. In addition, the station is constantly announcing government and local government plans to reduce the coronavirus. In turn, Polish Radio 24 transmits all press conferences, statements related to the virus epidemic. The station broadcasts on an ongoing basis information and messages published by representatives of the government, state institutions, local governments and the authority of hospitals in the regions.<sup>7</sup>

Radiowa Trójka broadcast special editions of the program entitled “Puls Trójki,” “Za, a nawet przeciw,” “Do południa,” “Klub Trójki.” Then journalists show various aspects of life caused by the threat. Issues related to labor law, principles of safe behavior, proper nutrition, advice of psychologists and many others are raised. The station regularly displays messages important for reducing the epidemic.

### 3. “Będzin – actively at home”

The new project of the city authorities is “Będzin aktywnie w domu” (Będzin – actively at home). It is a program encouraging residents to actively spend time at home during quarantine (Table 1). The Municipal Office in Będzin together with

Table 1. Schedule of classes as part of the project  
“Będzin – actively at home”

Day	Schedule of classes		
Monday	Reading a book on the screen from the Ibuk Libra platform 10.00 am	Zumba 6.00 pm	–
Tuesday	Creative fun for children Do it with us librarians 11.00 am	Sports activities for adults and children 3.00 pm	BPU 6.00 pm
Wednesday	A guide to the Treasury for adults and children 5.00 pm	Dance classes for children from Dance4you 3.00 pm	–
Thursday	Composing on demand for adults and children 3.00 pm	Tabata 6.00 pm	Zumba 7.00 pm
Friday	Art classes for children 1.30 pm	Joga 4.30 pm	Fitness 6.00 pm
Saturday	Balloon wonders for adults and children 2 pm	Good habit Read: Lyrical close-ups May 2, May 16, May 30 Meeting with the reporter May 9, May 23 7.00 pm	Zumba 6.00 pm
Sunday	Dance4You dance and sport activities for children	Sports activities for adults and children 11.00 am	One hundred albums in adult rock music 11.00 am

Źródło: <http://ok.bedzin.pl/2020/05/06/bedzin-aktywny-w-domu/> [accessed: 23.05.2020].

<sup>7</sup> <https://www.polskieradio24.pl/> [accessed: 20.05.2020].

the employees of cultural and sports institutions prepared a number of leisure activities. It is a combination of online classes in the field of sport and culture. Each of the residents will find something for themselves. The offer includes sports training, art classes, broadcasts and radio plays. All this via the internet for children and adults. The proposed physical activities take the form of fitness classes, tabas, zumba, yoga. You can also try your handicraft and art classes. The initiative's motto is: Let's stay home and have fun!

#### 4. "There is no boredom"

Lublin is one of the cities actively involved in the project „Zostań w domu – kultura przyjdzie do Ciebie” (Stay at home – art will come to you). Many Lublin branches joined the action organized through the Ministry of Culture. The institutions provide free movies, workshops and performances online.

Teatr im. H.Ch. Andersen (H.Ch. Andersen Theatre) promotes the work of Andersen. The theater website as well as the Facebook profile have video and audio materials. On Fridays from 9.30 am to 22.00 pm on Sunday recordings of performances are available. However, every Wednesday from 6.00 pm to 9.00 pm you can use materials from the series “Andersen's home reading.” Then the actors of the theater prepare their own readings of selected Hans Christian Andersen fairy tales.<sup>8</sup>

Workshops of Culture have also been included in the online campaign. The website has video materials that can inspire action. During an epidemic, you can do something interesting without leaving your home. Workshops of Culture in Lublin propose a series of activities for people of all ages. Everyone will find something for himself. An example of the workshop plan is presented in Table 2.

Another cultural initiative was initiated by the Lubelska Grupa Poławiacze Perel (Lublin Pearl Fishers Group). As part of the closure of cultural institutions, audiobooks with recorded Lublin Legends were made available. The author of the scenarios for the presented legends is Marcin Wąsowski. The recipients have 10 titles at their disposal. Among others, the following legends have been made available:

- *Legenda o sądzie diabelskim* (The legend of the devil's judgment),
- *Herb Lublina z koziołkiem* (Coat of arms of Lublin with a goat),
- *Jak Boczarski na młynie* (Like Boczarski at the mill),
- *Nieszczęsna Rusalka* (The unfortunate Rusalka),
- *Legenda o jarmarkowej kurze* (The legend of the market chicken).<sup>9</sup>

<sup>8</sup> [www.teatrandersena.pl/teatroteka](http://www.teatrandersena.pl/teatroteka) [accessed: 23.05.2020].

<sup>9</sup> <http://polawiaczeperel.pl/impropowiesci-lubelskie/> [accessed: 23.05.2020].

Table 2. Sample activities under the “There is no boredom”

Date	Activities
June 2, at 11 am	Lekcje sztuki: wprowadzenie do fotografii analogowej Art lessons: an introduction to analog photography
June 5, 11.00 am	Lekcje sztuki: Domowe witraże Art lessons: Home stained glass
June 9, 11.00 am	Hoop dance czyli instrukcja obsługi hula hoop dla początkujących Hoop dance or hula hoop instruction for beginners
June 15, 5.00 pm	Od przybytku głowa nie boli – rozmnażanie roślin doniczkowych From the tabernacle, the head does not hurt – reproduction of pot plants
June 18, 4.00 pm	Domowy Warsztat: Wirtualne rzeźbiarstwo. Warsztaty modelowania 3D w programie Sculptris Home Workshop: Virtual Sculpture. 3D modeling workshops in the Sculptris program

Źródło: <https://warsztatykultury.pl/nudy-nie-ma/> [accessed: 23.05.2020].

City officials, Lublin artists, academic teachers, directors of cultural institutions, theaters and journalists were invited to co-create and collaborate on the audiobook.

Center “Brama Grodzka – Teatr NN” encourages Lubliners to take advantage of online mockups, Mockups created as part of the project “Lublin 2.0 – Interaktywna rekonstrukcja dziejów miasta” (Lublin 2.0 – Interactive reconstruction of the city’s history) and walks in former Lublin. The project was created as part of the celebration of the 700<sup>th</sup> anniversary of the location of Lublin under Magdeburg law.<sup>10</sup>

Due to the epidemic, all Lublin cinemas were closed. However, a large amount of production can be viewed online. Completely free and legal. Many productions have been made available on the YouTube platform. The Studio Filmowe TOR (TOR Film Studio) made the Polish cinema classic available to viewers. Through the online platform you can watch movies of Krzysztof Zanussi or Krzysztof Kieślowski. The Studio Miniatur Filmowych (Film Miniature Studio), on the other hand, offers the youngest viewers over 500 stories. This is a polar fairy tale entitled *Pomysłowy Dobromir* (Ingenious Dobromir) or *Dziwne przygody Koziołka Matołka* (The strange adventures of Koziołek Matołek).

The Culture Center in Lublin also decided to transfer its cultural activities to the network. The first of the proposed actions is live drawing. The initiative takes place from Monday to Thursday at 9.00 am Then Agata Jakuszko-Sobocka on her YouTube channel creates drawing notes about Lublin.

On the other hand, from Monday to Friday, the Culture Center encourages to take part in the venture entitled “NuciMisie w domu” (NuciMisie at home)

<sup>10</sup> <http://teatrnn.pl/> [accessed: 23.05.2020].

then the youngest ones under the care of Sylwia Lasok are learning songs of the Deficyt Natury Band. The transmission can be watched via Facebook. In addition, Pracownia Sztuczka invites children to play in the “Sztuczki kulinarne na żywo” (Live cooking tricks) or “Domowe sztuczki sensoryczne” (Homemade sensory tricks) also available on Facebook.<sup>11</sup>

## 5. “Płock – Culture to go”

Płocki Ośrodek Kultury i Sztuki (Płock Center of Culture and Art) in connection with the cancellation of the planned cultural events, he focused on relocating the business to the virtual world. During the quarantine period, the Płock Center of Culture and Art joins the “Zostań w domu – sztuka przyjdzie do Ciebie” (Stay at home – art will come to you). Therefore, it encourages you to take advantage of the online offer called “Kultura na wynos” (Płock – Culture to go). The offer includes virtual breakdance dance lessons, art workshops, guitar classes, visiting exhibitions, competitions, playing board games together.<sup>12</sup>

Art workshops have been moved to domestic comfort “Domowe Rodzinne Sztukowanie Online” (Home Family Art Online). Until now, classes were held at the “Kolor i Forma” (Color and Form) Creative Activities Studio at the Wisła Gallery. The workshops will use origami or decoupage techniques. However, the organizers ensure that each of us will have no problem finding the necessary materials. The joint creation of artistic differences takes place via an internet platform every Wednesday at 11.00 am Płock Center of Culture and Art also promotes physical activity. Breakdance workshops led by Zbyszek Góral have appeared in the online offer. Children and parents will be able to master breakdance steps and learn short dance arrangements.<sup>13</sup>

The “Czytanie na ekranie” (Reading on the screen) initiative is a suggestion for long evenings. The project involves reading fairy tales and excerpts from publications of the Płock Center of Culture and Art. The initiative invited the President of the City of Płock, Deputy Mayor of the City of Płock, theater workshop instructors addition, kids will be able to try their hand at the specially designed board game “Pełna Coolturka” (Full Coolture). All the necessary items in the form of boards, cubes, pawns and cards can be downloaded from pokis.pl. The game is available in the color version as well as in black and white possible to be colored according to the players’ preferences. The institution has also prepared an offer for

<sup>11</sup> <https://www.facebook.com/PracowniaSztuczka/> [accessed: 24.05.2020].

<sup>12</sup> <https://tp.com.pl/artykul/zostan-w-domu--kultura/944643> [accessed: 24.05.2020].

<sup>13</sup> <https://kujawsko-pomorskie.travel/pl/wydarzenia/warsztaty-plastyczne-domowe-rodzinne-sztukowanie-online> [accessed: 24.05.2020].

music lovers. This is the “20 na 20” anniversary jubilee playlist available through the Spotify music service.

## 6. Summary

During the pandemic, the functioning of cultural and entertainment places was suspended. Despite this, the inhabitants were not alone in this matter. They do not have to fight the enormity of free time and boredom. Most cultural institutions took part in the project of the Minister of Culture and National Heritage “Zostań w domu – sztuka przyjdzie do Ciebie” (Stay at home – art will come to you). As part of the project, institutions such as museums, art centers, galleries, theaters propose specially selected online workshops. Classes help develop manual and intellectual skills. A wide range of workshops in the form of creative activities for children, sports activities, art lessons, interactive games enables the development of the child and his loved ones.

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## **Działalność instytucji kultury w okresie pandemii. Studium przypadków**

**Streszczenie.** *W artykule ukazano funkcjonowania instytucji kultury w okresie pandemii. Część teoretyczna przedstawia projekt pt. „Zostań w domu – sztuka przyjdzie do Ciebie” ze wskazaniem instytucji kulturalnych biorących udział w inicjatywie, opracowany na podstawie strony internetowej Ministerstwa Kultury i Dziedzictwa Narodowego. Część praktyczna to analiza dostępnej w Internecie oferty kulturalnej online. Pod uwagę wzięto działalność instytucji kulturalnych Będzina, Lublina i Płocka.*

**Słowa kluczowe:** *instytucje kultury, działalność instytucji kultury, oferta kulturalna online, pandemia*



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## **A Hospital Management Model Based on Accreditation Standards**

**Abstract.** *Standardization in the health care sector in Poland is motivated by the need to find effective mechanisms of improving the quality of medical services. A hospital accreditation programme is one of the quality management models established in the Polish legislation. The author describes the hospital management model based on accreditation standards and the way it correlates with classical management functions, such as planning, organization, motivation and control. A series of benefits resulting from obtaining an accreditation certificate are presented, including the role of accreditation standards in financing health services by the National Health Fund. The practical implementation of accreditation standards indicates a weak correlation with motivation and control functions. The article also presents weaknesses in the hospital accreditation programme that require additional management measures so that the desired outcomes of the hospital management model could be achieved.*

**Keywords:** *accreditation standards, medical standard, management functions, quality of medical services, hospital*

### **1. Introduction**

The management of healthcare institutions, including hospitals, is a process that is subject to increasing dynamics due to changes in the business environment and health policy. The ability to adapt hospital management strategies requires seeking effective mechanisms to ensure the development of this specific organisation and maintaining a high position on the medical services market. Given the specificity of inpatient care, hospitals require business models oriented towards providing comprehensive patient care, safety and continuous improvement of the

quality of medical services. The ability to manage change and combine achieving business objectives with meeting the expectations of patients and institutional clients is the key to rational management of limited financial resources and successful implementation of the process of improving the management of the healthcare institution.

Along with the increase of patients' awareness, their expectations towards medical facilities and healthcare professionals increase as well. Patients do not trust the medical institutions where they are treated as objects. In order to prevent such situations, many managers introduce mechanisms to improve the quality of services and patient welfare [Karkowski 2012: 149].

The variety of mechanisms introduced to improve the quality of medical services results from the awareness of the ultimate goal of patient care, the legal form of medical activity and the possibility of seeking additional sources of financing. One of the business models that can ensure the systematization of the hospital management process with a focus on improving the quality of medical services is the accreditation model based on the standards approved by the Minister of Health.

Hospital management in Poland is subject to standardisation according to the accreditation standards of the Polish National Center for Quality Assessment in Health Care in Cracow<sup>1</sup>. Accreditation, as an external method of quality assessment, according to standards, allows to measure the current situation of the entity and make comparisons in terms of changes concerning the degree of compliance with the standards in a time perspective and in relation to individual issues [Bedlicki & Henning 2012: 124]. The assessment of individual standards is assigned specific weights and the accreditation of the Minister of Health is granted if at least 75% of all standards are met.

Given the fact that the National Health Fund is the basic and only public payer of health services, mechanisms regulating the competitiveness of healthcare institutions using public funds were introduced. The competitiveness on the market of health services when concluding contracts with the National Health Fund for health services is determined by the criteria for evaluation of offers submitted by particular healthcare institutions in areas including among others the following:

- providing medical personnel whose qualifications correspond to those specified in the tender,
- providing appropriate medical devices necessary for the performance of specialised and highly specialised medical services,
- availability to provide medical services,

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<sup>1</sup> The Polish National Center for Quality Assessment in Health Care in Cracow is an accreditation centre established under the Ustawa z dnia 6 listopada 2008 r. o akredytacji w ochronie zdrowia, t.j. Dz. U. 2009, nr 52, poz. 418 z późn. zm. [Act of 6 November 2008 on accreditation in health care, Journal of Laws 2009, No. 52, item 418].

- prices for a given medical service,
- demonstrating high quality of medical services by presenting the results of evaluation by an external entity in the form of an ISO quality certificate or accreditation of the Minister of Health.

In view of the established criteria for evaluation of offers by the National Health Fund, hospital managers strive to obtain the highest possible scores in order to receive a satisfactory level of financing of health services. The implementation of the Minister of Health's accreditation model plays a significant role in this context in that it not only allows for an increase in revenue from medical activity, but also provides a ready-made tool to support hospital management. Obtaining a competitive advantage depends on the ability of a particular healthcare institution to adapt to the changing situation in the medical services sector and the ability to take on new challenges to achieve statutory objectives, including business objectives.

The aim of this article is to present a model of hospital management based on accreditation standards in correlation with the classical management functions such as planning, organizing, motivating and controlling presented in management theory.

## **2. Requirements of accreditation standards of the Minister of Health**

### **2.1. Rationale for applying accreditation standards in hospital management**

Accreditation, as an external method of quality assessment according to standards, allows to measure the current situation in a particular entity and make comparisons in terms of changes concerning the degree of compliance with the standards in a time perspective and in relation to individual issues [Bedlicki & Henning 2012: 124].

Accreditation standards for Polish hospitals are implemented in order to obtain an accreditation certificate; this process is based on the following legal regulations:

- Act of 6 November 2008 on accreditation in health care (Journal of Laws 2009, No. 52, item 418);
- Ordinance of the Minister of Health of 6 August 2009 on the Accreditation Council (Journal of Laws No. 130, item 1074);
- Ordinance of the Minister of Health of 31 August 2009 on the procedure for assessing the compliance of an entity providing health services with accreditation standards and the amount of fees for performing such procedure (Journal of Laws No. 150, item 1216);

– Notice of the Minister of Health of 18 January 2010 on accreditation standards for the provision of health services and operation of hospitals (Official Bulletin of the Ministry of Health 10.2.24 of 25 January 2010), which introduced a manual entitled “Hospital Accreditation Program.”

According to the available data, there are currently 194 hospitals accredited by the Minister of Health;<sup>2</sup> given the total number of hospitals in Poland, i.e. 930,<sup>3</sup> this constitutes only 20.86% of all hospitals. This result may be interpreted in two ways. Firstly, as many as over 20% of hospitals are managed according to the model based on accreditation standards. Secondly, one should consider the reasons why only slightly more than 20% of hospitals are managed according to the legally established standardization of medical services. The presented data do not show hospitals that implemented accreditation standards in practice, but whose level of compliance during the assessment by inspectors from the Polish National Center for Quality Assessment in Health Care was not sufficient, which resulted in the refusal to grant the certificate. In the years 2017-2018 there appeared a possibility to apply for funding for the process of implementing accreditation standards and a free inspection by the Polish National Center for Quality Assessment in Health Care.

The concept of a medical standard was introduced to systematize the way quality is defined in medical services. Standards are defined as an agreed or assumed level of performance of a practice or its individual elements, and their purpose is to describe and measure compliance to achieve the highest level of patient care quality. Standardization in the medical services sector is understood as an activity aimed at achieving an optimal level of structure by developing and implementing requirements, standards, principles, typical conditions, work technology and services used in the medical industry [Wiśniewska & Koniecznyńska 2011: 256].

The introduction of accreditation standards in hospital management is voluntary; currently there are no legal requirements to confirm the quality of medical services provided following the assessment by an accreditation centre. However, an accreditation certificate is a source of competitive advantage in the medical services market. This advantage is reflected in preferential points awarded to hospitals in tenders for medical services announced by the National Health Fund. In the Ordinance of the Minister of Health of 5 August 2016 on detailed criteria for the selection of offers in the procedure for the conclusion of contracts for the provision of health care services, Annex 2 sets out the score related to quality certificates:

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<sup>2</sup> Data available on the website of the Polish National Center for Quality Assessment in Health Care in Cracow, [www.cmj.org.pl](http://www.cmj.org.pl) [accessed: 15.05.2019].

<sup>3</sup> Data available in the Statistical Bulletin of the Minister of Health as of 31.12.2017; [www.csioz.gov.pl](http://www.csioz.gov.pl) [accessed: 15.05.2019].

- ISO 9001 certificate – 1.5 points,
- Accreditation certificate – 8 points.

Therefore, hospitals receive a larger package of contracted medical procedures financed from public funds. The accreditation certificate has a significant impact on the image of the hospital, it also means that the healthcare institution complies with accepted medical standards in order to ensure an appropriate level of patient care quality. Quality management in an organisation may be based on generally accepted management theories in this area, as well as available standards and codes of conduct.

Implementation of accreditation standards in hospitals enables to verify and change numerous interacting subsystems, such as: patient admission and patient care, personnel management, supervision of records, pharmacotherapy, medication management, control of hospital-acquired infections, sterilization process, supervision of medical equipment and infrastructure, waste management. As a result, the patient enjoys increased safety of hospital stay, the management staff receives information about problems which beforehand were often not taken into account at all [Szczurek 2015: 76].

Given the current situation in the health care sector, choosing the best possible strategy for managing a healthcare institution is not an easy task for the managers. The experience of many healthcare institutions shows that this is a quality-oriented strategy, which may involve applying for an accreditation or ISO certification. Each of these paths is to lead to better functioning of the organisation, but also to ensure that the services provided by the healthcare institution are assessed as best as possible in terms of quality by the final recipient of services, i.e. the patient [Dobska & Dobski 2016: 10].

On the basis of many years of professional experience related to the implementation of accreditation standards in hospitals, the author of the article enumerates the following key benefits resulting from this process:

- improvement of patient safety and quality of medical services,
- increased awareness of medical personnel in the scope of monitoring adverse events in the provision of medical services,
- introduction of clinical procedure analyses,
- standardization of practices both in the medical and administrative area,
- increased financing of medical services by the National Health Fund,
- increased competitiveness on the medical services market.

The management model adopted by the managers of a healthcare institution based on accreditation standards allows for maintaining repetitive actions to ensure a high level of patient care in the area of managing the quality of medical services.

## 2.2. Brief presentation of accreditation standards

An accreditation guide was created and it specifies the requirements for quality assurance of patient care at different levels of management. This guide, comprising 225 standards, is a compendium of knowledge which provides guidelines on actions that should be taken in order for a hospital to be awarded an accreditation certificate.

Accreditation standards are in the form of short statements that define the desired state. They are often accompanied by a slightly longer explanation of the intentions of a particular standard. Quite often the main standard is complemented by detailed standards that address particular aspects of the main standard [Szetela 2012: 213].

Compliance with accreditation standards is assessed according to the following scoring scale:

- 5 points – full compliance with the standard,
- 3 points – partial compliance with the standard,
- 1 point – standard not met.

Accreditation assessment is a comparison of accreditation standards by inspectors with the actual situation in a particular entity. The requirements are relatively high, but they are achievable for hospitals which make an effort to introduce changes. They set higher requirements than those defined by law and concern key elements of the treatment process. The standards are scored and weighted, and their construction is based on short sentences defining the desired condition. The content of the standard itself is accompanied by explanations, ways of verifying compliance and the maximum number of points which may be awarded [Wierzowiecka & Orłowski 2016: 99].

The set of applicable accreditation standards comprises 15 groups covering particular departments, as presented in Table 1.

Analysis of the data indicates that the highest numbers of points are assigned for care environment management and patient rights. Comparable numbers of points may be awarded for compliance with groups of standards related to infection control, procedures and anaesthesia. This does not mean that the above groups of accreditation standards are the most important in the provision of high quality medical services, however, it indicates the multitude of quality-related issues in these areas.

Standardization is to a large extent related to the description of individual activities in the form of procedures, instructions or the so-called standard operating procedures. When analysing the requirements included in the hospital accreditation programme, it may be concluded that none of the given standards specify the manner of describing such activities, let alone the level of detail of the required

Table 1. Groups of accreditation standards with scoring

No.	Group of accreditation standards of the Polish National Center for Quality Assessment in Health Care	Maximum number of points
1.	Continuity of care	70
2.	Patient rights	100
3.	Assessment of patient's situation	85
4.	Patient care	50
5.	Infection control	95
6.	Procedures and anaesthesia	95
7.	Pharmacotherapy	65
8.	Laboratory	50
9.	Diagnostic imaging	45
10.	Nutrition	30
11.	Quality improvement and patient safety	75
12.	General management	65
13.	Human resource management	85
14.	Information management	65
15.	Care environment management	130

Source: own elaboration based on Obwieszczenie Ministra Zdrowia z dnia 18 stycznia 2010 r. w sprawie standardów akredytacyjnych w zakresie udzielania świadczeń zdrowotnych oraz funkcjonowania szpitali, Dz. Urz. M. Z. 10.2.24 z dnia 25.01.2010 r. [Notice of the Minister of Health of 18 January 2010 on accreditation standards for the provision of health services and operation of hospitals (Official Bulletin of the Ministry of Health 10.2.24 of 25 January 2010)].

documents. It is recommended that the managers of the hospital should primarily take into account the level of qualifications of both the medical and administrative staff and consider the impact of such documents on ensuring safety of patient care.

### 3. Hospital accreditation model in correlation with management functions

A healthcare institution providing round-the-clock medical services, i.e. a hospital, is subject to the same management rules as other economic entities. The management model of the hospital is largely determined by the adopted development strategy, statutory objectives, as well as the level of knowledge of the managers in the area of management.

The planning function consists primarily in anticipating future conditions and defining how future objectives and tasks are to be achieved. Planning is an attempt to anticipate the future and prepare for changes [Dołnasz et al. 2009: 50]. Given the requirements of accreditation standards, the elements of planning can be divided into two groups. The first one is related to the activities of the managers in

Table 2. Accreditation standards related to the planning function

Planning in top level management	Planning in infrastructure management
<ul style="list-style-type: none"> <li>– developing a strategic plan and updating it periodically</li> <li>– task force planning</li> <li>– development of quality improvement projects in accordance with the pdca principle</li> <li>– planning regular updates of orders, plans and procedures</li> <li>– developing a care plan for each patient</li> <li>– developing an employment plan</li> <li>– developing training plans and planning financial resources for improving staff qualifications</li> </ul>	<ul style="list-style-type: none"> <li>– plan to remedy construction defects</li> <li>– hospital emergency plan</li> <li>– plan for protection and maintenance of medical devices</li> </ul>

Source: own elaboration.

terms of top level management. The second group includes operational planning for patient safety in the infrastructure management process and related emergency and contingency plans. The list of accreditation standards related to the planning function in management is presented in Table 2.

The data suggest a lack of unambiguous standards in terms of operational planning broken down into tasks and necessary resources, and specifying the responsibility for the implementation of particular tasks. Partially, operational planning is associated with creating quality improvement projects, but according to the requirement of the standard, this largely concerns the process of medical services quality management.

Organisation is another management function analysed in the hospital management model according to accreditation standards.

Organisation is selecting human, physical, financial and information resources for the established objectives and processes and determining the sequence, time and place of performing work. The organising function also means building an organisational structure. Given the specific features of the service, organisation is a function that is associated with a high degree of indeterminacy [Downar 2008: 16-17]. Coordination is one of the elements of organising. Integration of activities of different departments within the organization is one of the components of this process. Routine coordination activities can be performed with the use of rules and standard procedures. In case of an urgent need for coordination, a task force can be established [Griffin 2017: 349-352].

The basic elements of the organisation function are defined in only two accreditation standards on drawing up the organisation chart and updating it, and appointing persons responsible for the organisation and management of departments (coordination). Current activities related to the operation of task forces in



various areas of medical activity are treated as a permanent element of the adopted hospital accreditation model. Such task forces include:

- Infection Control Team and Committee,
- Pharmacotherapy Team,
- Quality Team,
- Ethical Team.

Task forces are responsible for undertaking measures aimed at improving the quality of medical services and patient safety, and conducting detailed medical analyses. As many as 206 standards out of a total of 225, i.e. 91.55%, are associated with the organising function. Organisation in this case concerns establishing specific rules of conduct, some of which are required in the form of specific procedures and workflows both in the medical sphere and outside the medical activities of the hospital.

The next management function under consideration is motivation. Motivating employees is a process of consciously and purposefully affecting their motivation to work by creating means and possibilities of meeting their expectations and values for the purpose of achieving goals, taking into account the environment of both parties to the process [Król & Ludwiczynski 2006: 333]. From the point of view of work efficiency, it is a very important management function. In the model of hospital management based on accreditation standards, it is difficult to find specific standards that require motivating employees. The only related standard is the one concerning the annual staff satisfaction survey. On the basis of an analysis of survey results, the hospital management may draw conclusions and implement measures to boost employee motivation.

The last management function is control. This function is very important in assessing the effectiveness of the management functions preceding control, i.e. planning, organising and motivating. In order for the management functions to be performed properly, information about its efficiency is necessary. Feedback is necessary to enable verification of the relevance of the actions taken previously and to provide a basis for subsequent decisions [Hamrol 2013: 58]. The control mechanisms established in the hospital accreditation process are to a large extent focused on controlling clinical activity. The intervals of controls are specified in the standards. The control function in non-medical activities consists in periodic evaluation of the effects of introduced changes (in terms of improving quality and patient safety), carrying out employee assessment and control of emergency protection systems (water, energy, medical gases) once every two years. In the medical area, the accreditation standards related to the control function concern:

- verifying the content and completeness of medical records once every six months,
- controlling medicines, equipment and materials used in life-threatening situations,

- using a preoperative control card,
- quality control in laboratory tests,
- quality control tests in X-ray diagnostics.

Summarizing the presented considerations on the correlation of management functions in the hospital management model with the use of accreditation standards, the following weaknesses of this model may be identified:

- standardization of activities largely concerning the process of providing medical services,
- lack of specific mechanisms and tools to motivate employees to comply with the standards,
- lack of standards describing the process of controlling the degree of fulfilment of established requirements,
- lack of periodic controls by the Polish National Center for Quality Assessment in Health Care during the 3-year validity period of the accreditation certificate.

#### 4. Summary

Managing organisations from the health care sector is constantly evolving, not only because of the health policy and economic situation, but also because of the growing demands on the part of stakeholders. Expectations and growing requirements of hospitalised patients force hospital managers to look for an appropriate management model, primarily taking into account high quality of medical services. The multidimensionality of the notion of quality of medical services determines the method of managing a healthcare institution. However, in the process of hospital management, it is necessary to take into account not only quality management, which is just one element, but also the effectiveness of implementation of basic management functions. The considerations presented in the article are indicative of some imperfections of the management model according to accreditation standards, which lead to the following conclusions:

1. The model of hospital management based on accreditation standards systematizes procedures mainly in the area of improvement of medical services quality.

2. Effective performance of the management function requires the introduction of internal mechanisms regulating the process of motivating employees and controlling their actions.

3. An accreditation model supported by other available standards, e.g. ISO 9001:2015 can ensure effective hospital management.

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## Model zarządzania szpitalem według standardów akredytacyjnych

**Streszczenie.** Standaryzacja w sektorze ochrony zdrowia w Polsce warunkowana jest potrzebą poszukiwania skutecznych mechanizmów poprawy jakości usług medycznych. Jednym z przyjętych w polskim ustawodawstwie modeli zarządzania jakością jest program akredytacji szpitala. W ar-

tykule przedstawiono model zarządzania szpitalem z wykorzystaniem standardów akredytacyjnych w korelacji z klasycznymi funkcjami zarządzania: planowaniem, organizowaniem, motywowaniem i kontrolowaniem. Ukazano korzyści wynikające z uzyskania certyfikatu akredytacyjnego i zwrócono uwagę na rolę standardów akredytacyjnych w finansowaniu usług zdrowotnych przez Narodowy Fundusz Zdrowia. Praktyczna implementacja standardów akredytacyjnych wskazuje na słabą korelację z funkcjami motywowania i kontrolowania. Wykazano słabe strony programu akredytacji szpitali wymagające uzupełnienia działań zarządczych, aby osiągnąć pożądane wyniki w przyjętym modelu zarządzania szpitalem.

**Słowa kluczowe:** standardy akredytacyjne, standard medyczny, funkcje zarządzania, jakość usług medycznych, szpital

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