



Comparative Analysis of the Impact of the Pandemic on Agroindustrial Complex and the Financial Support of its Employees in Ukraine and EU Countries

Análisis comparativo del impacto pandémico en el complejo agroindustrial y el apoyo financiero a sus empleados en Ucrania y países de la UE

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Abstract

The relevance of the topic of research is determined by the presence of problems caused by the pandemic Covid-19 in the agroindustrial sectors of the economies of Ukraine and European Union countries. The purpose of this work is to study the impact of the pandemic on the development of the agribusiness economy of Ukraine and the EU. The basis of the methodological approach is a qualitative combination of methods of systematic analysis of the impact of the pandemic, a statistical reflection of the impact of the pandemic on the development of the agroindustrial complex economy, a comparison of the impact of the pandemic on the development of the agroindustrial complex sector in Ukraine and the EU, and a study of the problems that have arisen on the agricultural sector. The results of this research are the determination of the factors that led to changes, including the formulation of problems, logistics, and ways to improve the situation in the agroindustrial complex of Ukraine and the EU.

Keywords: economy, agricultural products, workforce, food supply, agricultural workers.

Resumen

La relevancia del tema de investigación está determinada por la presencia de problemas causados por la pandemia Covid-19 a los sectores agroindustriales de las economías de Ucrania y países de la Unión Europea, para lo cual estudiaremos el impacto de la pandemia en el desarrollo de la economía de agronegocios de Ucrania y la UE. La base del enfoque metodológico es una combinación cualitativa de métodos de análisis sistemático del impacto de la pandemia en el desarrollo de la economía, junto a un reflejo estadístico del impacto de la pandemia sobre el desarrollo del complejo agroindustrial; una comparación del impacto de la pandemia en el desarrollo del sector del complejo agroindustrial en Ucrania y la UE, y el estudio de los problemas que han surgido en el complejo agroindustrial y formas apropiadas de mitigar el impacto de la pandemia en el sector agrícola. Los resultados de esta investigación son la determinación de los factores que llevaron a cambios en el sector agrícola, incluida la formulación de problemas, logística y formas de mejorar la situación en el complejo agroindustrial de Ucrania y la UE.

Palabras clave: economía, productos agrícolas, personal, suministro de alimentos, trabajadores agrícolas.

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Introduction

In addition to the impact on the health and life of the population of all countries of the world, the coronavirus pandemic had a significant impact on the economy of any country. Conditioned upon the pandemic, there were many cases of infection by employees of various enterprises, due to which they could not perform their activities. Also, conditioned upon the coronavirus restrictions, many businesses were forced to stop their activities for several weeks or even months. All this led to numerous losses for all subjects of the world economy, enterprises were forced to bear considerable economic losses and make appropriate economic decisions at their levels, or simply leave the national markets. Many people were forced to lose their sources of income conditioned upon the closure of enterprises or the cessation of their activities (Bhalla and Wuilbercq, 2020; Glauber *et al.*, 2020).

The pandemic has had no less impact on the agricultural sector, as ensuring the uninterrupted functioning of global and national food supply chains is critical to ensuring food supply, preventing food crises in countries already facing food and nutrition security challenges, and reducing the overall negative impact of the pandemic on the world economy (FAO, 2020b). Although the share of agroindustrial complex (AIC) in the global economy has declined from approximately 40% to 26% over the past two decades, agriculture provides the livelihoods of more than one billion people worldwide and remains the backbone of many low-income countries with low-income level, which accounts for 60% of employment (ILO, 2019). This sector is especially important in Ukraine, where the share of the agroindustrial complex in the national economy occupies a significant share. This is the main source of employment for many Ukrainians who work in the agroindustrial complex.

Agricultural workers often find themselves in a state of poverty. A significant proportion of workers employed in this sector are below the poverty line and cannot provide for their basic needs. Although they play an important role in national economies, providing links to global structures of agricultural production and trade and feeding the world, many agricultural workers and their families suffer more than others from poverty and food insecurity during such crisis states of the economy as the coronavirus pandemic, despite the fact that they produce a large share of food products themselves. Although agribusiness jobs during the pandemic have been identified as important in the context of the coronavirus crisis in many countries, measures taken to slow the pandemic have placed additional strain on the sector's ability to continue to meet demand, provide incomes and livelihoods, and ensure safety and health of millions of agricultural workers and producers of agricultural products worldwide (IFAD, 2016). Urgent action to address the multiple issues of decent pay and livelihoods for workers in the agribusiness sector, which they face throughout the duration of the coronavirus restrictions, and to improve the functioning of the agrarian sector will be critical to effectively overcoming the crisis that has occurred conditioned upon the coronavirus, and future crises that will arise one way or another.

The purpose of the work is to study the impact of the pandemic on the development of the agribusiness economy of Ukraine and European Union countries.

Materials and methods

The main method used in this research work is a method of systematic and comparative analysis. The basis of the analysis is the share of the agroindustrial complex in the national economies of the studied countries, the dynamics of statistical indicators of agricultural product markets, and changes in legislative regulation from the relevant centralised bodies. Using comparative analysis, the agroindustrial complexes of Ukraine and the European Union countries were studied. The theoretical basis of this research work is the results of studies carried out by a number of researchers, aimed at analysing the changes that the pandemic has brought to the agroindustrial complexes of the studied countries and ways to solve the problems that the agricultural sector faced during the coronavirus pandemic. A significant part of scientists from other countries are Chinese scientists since China has gone through the coronavirus pandemic most mildly compared to other countries, including in the agroindustrial sector.

The presented research work was carried out in three main stages. At the first stage of research, its theoretical base was prepared, which describes the specific features of the agroindustrial complex, as a significant part of the national economy, ways of protecting workers of the agroindustrial complex, and levers that can significantly affect the market of agricultural products and prevent it from falling into the subsequent fall of many important for market indicators. The theoretical basis is supported by examples from the years of the coronavirus pandemic and statistical data that most qualitatively depict the changes that the pandemic has brought to the agroindustrial sector.

In the second stage of the research work, an analytical study of the prospects for the further functioning of the agroindustrial complex around the world after the reduction of the number of restrictions related to the pandemic was carried out. Agroindustrial complexes of many countries, their importance for the national economy, and differences were analysed, to single out their specific features of functioning. After analysing the specific features of the functioning of agroindustrial complexes, a vision was obtained regarding its prospects and further development path. Special attention is paid to the agroindustrial complex of Ukraine, which has special importance and influence on the formation of Ukraine's gross domestic product (GDP). Changes in the agroindustrial complex during the pandemic are also compared with the countries of the region of Europe and Central Asia (ECA), which includes Ukraine and EU countries. Such a comparison most qualitatively shows whether the pandemic has really hit the agricultural sector of Ukraine and the EU countries and whether the consequences of the pandemic are not as significant, or are not as significant as they could be under other conditions.

At the final stage of the research work, based on the results obtained in the course of it, the final conclusions of the scientific study were formulated, which will form the final picture, regarding the contribution of the pandemic to the development of agroindustrial complexes of Ukraine and EU countries. In particular, a number of problems that arose during the pandemic and are still unresolved or not fully resolved were formulated. After formulating the problems, ways were proposed that could influence the agroindustrial complexes of Ukraine and EU countries towards improvement and help them return to the financial indicators they had before the start of the pandemic and the restrictions related to the pandemic.

Results

From the beginning of the pandemic until today, there have been no significant interruptions in the supply of food products. However, logistical and technical problems in supply chains, in particular the difficulty of crossing borders and restrictions on movement within countries, including problems in the field of labour, which arose as a result of the illness of a large number of people, including among workers in the agricultural sector, led to interruptions in the supply of certain types goods, especially the international transportation of agricultural products. Goods with high added value, and in particular, perishable goods such as fresh fruits and vegetables, meat, fish, milk, and flowers, had the primary tendency to increase in price, conditioned upon the difficulty of their transportation explained by the disruption of logistics and, accordingly, the appearance of shortages. The failure of many countries to compensate for a large amount of loss suffered by workers in the agricultural sector has led to the destruction of jobs in entire subsectors of the agroindustrial complex, for example, floriculture has caused great changes in a number of African countries, and the same situation may arise in many European countries that will not be able to cover the costs workers in the agricultural sector (Bhalla and Wuilbercq, 2020). A further decrease in the quality of the workforce in many sectors and a reduction in the number of jobs, especially in the field of food supply logistics, is possible.

Restrictions on movement prevent farmers from transporting products on time and in sufficient quantities, which led to the destruction of a large number of produced products. In many countries, farmers are currently unable to sell their products in local markets or in local shops, restaurants, bars, hotels, and other places where agricultural products are needed, which are temporarily closed, reducing the demand for such products. The same problem occurred in Ukraine, where farmers had to actually throw away their products, explained by the inability to sell them to different regions of the country or abroad for yesterday's consumers.

Also, the pandemic has seriously affected the labour-intensive production and processing of agricultural products conditioned upon the absence or reduction of the workforce and the temporary forced cessation of production. For example, the European Union's agricultural sector has faced acute labour shortages conditioned upon border closures that have prevented hundreds of thousands of seasonal workers from arriving on farms that rely on their labour during the harvest season. The impact on the sector is expected to be long-term. A number of major European agricultural producers, including France, Germany, Italy, Spain, and Poland, are in a particularly vulnerable position. More than a quarter of the food produced in Italy depends on 370.000 permanent seasonal migrant workers. About 100.000 of the 370.000 workers in the agricultural sector were unable to come to Italy this year (Glauber *et al.*, 2020). This number of labour shortages was at risk in France. Meanwhile, in Germany, where approximately 286.000 seasonal workers grow and harvest fruit, vegetables, and wine each year, the government is developing various mechanisms to encourage enough workers to harvest, including paying for direct flights for agricultural workers and issuing temporary work permits for individuals who need shelter (Glauber *et al.*, 2020). On April 2, 2020, the European Commission issued a practical guide for member states to facilitate interstate travel of

seasonal workers in economically important specialties, including workers in the food sector, while simultaneously observing all necessary measures to avoid the further spread of the pandemic.

To study changes in absolute indicators, it is advisable to take the ECA region, which includes Ukraine and all EU countries. ECA is one of the main producers of cereals, accounting for approximately 22 percent of the total world production. The total production of cereals in the region in 2020 was at the level of 599 million tons, which is 2% (or 12.6 million tons) lower than in 2019. This decrease compared to the volume of production in 2019 is primarily conditioned upon the European Union, where the decrease in production amounted to 11%, and Ukraine, where the decrease was much smaller, namely 3.5%. ECA is a large wheat-producing region, the share of which in world production in recent years is 40 percent. Wheat production across the ECA region in 2020 was 292.4 million tonnes, down 5.2 percent (or 16.2 million tons) from 2019 and about 3.8 percent below the five-year average. According to the latest Food and Agriculture Organization (FAO) forecast, the volume of wheat production in the European Union in 2020 was 19.3 percent (or 30 million tons) lower than in 2019, and 16.4 percent lower than the five-year average (FAO, 2020b). The decrease is explained by a decrease in planted areas explained to excessive rainfall during planting and also considers low yields due to adverse weather conditions in other major producing countries.

In Ukraine, the volume of wheat production conditioned upon unfavorable weather conditions in 2020 was 11.7 percent lower than in 2019, and five percent lower than the average. Also in Ukraine, the results of wheat production below the average level in 2020 were affected by the decrease in the amount of precipitation during the growth and development of wheat in March and April, which are the main months for the growth of this crop (Table 1).

Table 1. Dynamics of wheat production volumes in EU countries and Ukraine

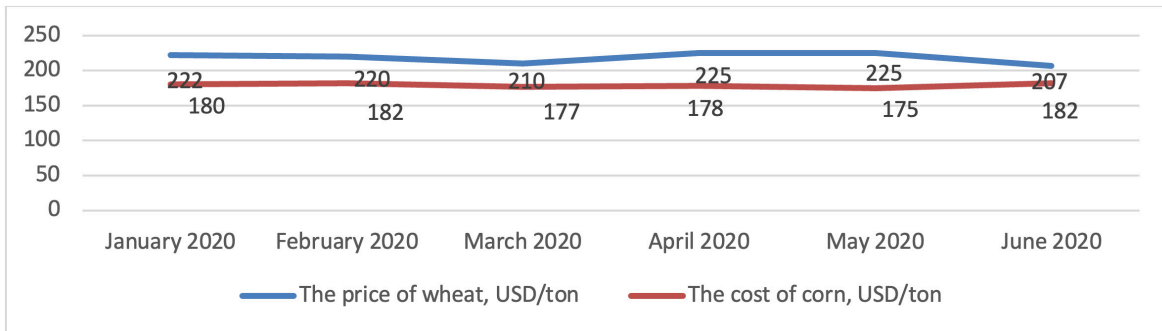
Tabla 1. Dinámicas de volumen de producción de trigo en UE y Ucrania

Country (group of countries)	Average indicator for 5 years, million tons	Production in 2019, million tons	Production for 2020, million tons	Change in 2020 compared to 2019	Change in 2020, compared to the average indicator for 5 years
Ukraine	26.3	28.3	25	-11.7%	-4.9%
EU countries	150.2	155.6	125.5	- 19.3%	-16.4%

Source: compiled by the authors based on FAO, 2020b. Fuente: elaboración propia en base a FAO, 2020b.

Thus, it can be stated that the agroindustrial complexes of Ukraine and the EU countries suffered much more than other countries in the ECA region. In addition to the amount of wheat production, it is important to consider the dynamics of its price on the graph. In general, export prices for wheat in Ukraine changed little in 2020. The chart also shows export prices for corn in Ukraine together with wheat prices. It should be noted that Ukraine is one of the world's largest exporters of corn, and data indicate the stability of export prices in the first six months of 2020 (Figure 1).

Figure 1. Dynamics of wheat and corn prices in Ukraine
Figura 1. Dinámicas precios de cereales y maíz en Ucrania



Source: compiled by the authors based on FAO, 2020b. Fuente: elaboración propia en base a FAO, 2020b.

Separately, it should be noted that conditioned upon the shortage of goods, it was necessary to reduce their export. Thus, on April 2, 2020, the Cabinet of Ministers of Ukraine introduced a temporary ban on the export of buckwheat (until July 1, 2020) to ensure the availability of this basic cereal crop for average households on the Ukrainian market and to prevent price fluctuations.¹ On July 1, 2020, the ban was lifted. On July 1, 2020, the participants of the grain market and the Ministry of Economic Development, Trade and Agriculture of Ukraine signed a new memorandum regarding the maximum volumes of grain exports for the 2020-2021 season. According to market participants, the Ministry of Economic Development, Trade and Agriculture has set the maximum export quota for 2020-2021 at the level of 17.2 million tons, which is less than the volume of exports in 2019-2020, which was about 20.5 million tons. In addition, on April 22, 2020, to prevent price increases, the government of Ukraine introduced state price regulations for many food products, including wheat flour, buckwheat, pasta, bread, milk, eggs, poultry, mineral water, oil, and sugar.²

Discussion

In situations where the coronavirus pandemic or fears of its spread adversely affect the agricultural sector, appropriate emergency measures should be taken to support agricultural businesses to stimulate agricultural production and ensure that workers continue to receive decent wages in accordance with existing collective agreements and/or relevant laws, and the enterprises themselves were able to continue their activities and at the same time not receive numerous losses. A group of Chinese scientists noted that in this context, special attention should be paid to the hundreds of millions of agricultural wage workers around the world who, although they play a crucial role in ensuring the continuity of the food supply chain, are often the most vulnerable, poor and food insecure (Luo *et al.*, 2020).

1 Resolution of the Cabinet of Ministers of Ukraine No. 1109, 2020.

2 Resolution of the Cabinet of Ministers of Ukraine No. 341, 2020.

At the same time, scientists Sukhwani *et al.* (2020) argue that the sudden onset of the coronavirus pandemic has currently exacerbated already existing food security concerns. Even before the outbreak of the coronavirus infection, national food systems were already at a critical stage in many countries of the world. As of 2018, more than 820 million people worldwide lacked safe access to food. Other common problems of climate change, natural disasters, high population growth, poverty, malnutrition, changing consumption patterns, obesity, etc. already pose serious challenges to sustainable development. According to the World Food Programme (2020), the coronavirus infection was expected to increase the risks of acute food insecurity for an additional 130 million people by the end of 2020. However, in Ukraine and in the EU countries there have not yet been any serious signs of a global food shortage and a reduction in the production of agricultural products, according to the statement of the Food Security Organization (Food Security Cluster, 2020). However, there has been a significant reduction in demand explained by the large-scale closure of restaurants and other commercial food establishments, according to the Food and Agriculture Organization of the United Nations (FAO, 2020a). Since most countries are currently under strict quarantine or similar situations, most food consumption is currently concentrated at the household level.

According to a report by the International Labour Organization, ensuring access to unemployment benefits and social assistance for agricultural workers who lose their jobs or have their working hours reduced is critical to mitigating the effects of the crisis (ILO, 2020). Beyond these immediate measures, to successfully emerge from current and future crises, momentum must be used to make progress by sustaining collectively funded, comprehensive, and universal social protection systems. This should not give employees motivation to look for new sources of income that are not related to the agrarian industry and will not call into question the further functioning of the agroindustrial complex. The seasonal nature of agricultural production exacerbates the challenges of social protection coverage for agricultural workers, who in many countries have traditionally been excluded from the scope of occupational health and safety legislation, including their minimum wages, maximum working hours, paid sick leave, and social welfare. The predominant informality of labour relations and the lack of infrastructure and services in rural areas further complicate access to social protection services where they work. Ensuring that all agricultural workers have access to basic social services, which include social benefits on temporary unemployment, is especially important to ensure their resistance to financial problems related to the coronavirus pandemic and the ability to provide for their needs, including food, which the workers of the agroindustrial complex produce. Social protection mechanisms such as non-refundable cash payments, access to credit, life insurance products, and weather index insurance at reduced tariff rates can be particularly important for agricultural enterprises, especially in cases where there is a temporary decrease in their economic activity, for example under during the coronavirus pandemic. In normal times, such mechanisms can play an important role in ensuring agribusiness and rural communities against crop failures, injecting funds into often poor rural economies, and creating infrastructure (ILO, 2020).

It is necessary to pay special attention to the safety and occupational hygiene of agricultural workers, both in the process of ensuring the availability of a sufficient number of seasonal agricultural workers in countries with developed economies and

from the standpoint of continuity of production in developing countries. All employees of the agroindustrial sector working in Ukraine or EU countries, regardless of their legal status and level of payment for their work in normal, non-crisis times, should work in safe conditions, which will significantly reduce the risk of their infection and interruption of their work, respectively. In real life, they are exposed to an increased risk of infection conditioned upon the lack of personal protective equipment in the conditions in which they have to work, especially in countries with underdeveloped economies, including Ukraine. All this leads to an increase in the number of diseases among workers in the agroindustrial sector and, accordingly, to the destruction of the production logistics of many agricultural enterprises (ILO, 2020).

Measures to reduce the risks associated with infection during the coronavirus pandemic should include ensuring access to effective personal protective equipment, changing the work procedures of agricultural enterprises to ensure a safe distance, which should usually be at least one and a half meters between workers (first of all, this should occur at the expense of revising processes that usually require close interaction between employees), implementation of other control measures by enterprises, including constant testing for coronavirus diseases of employees. These measures should allow the agricultural sector not to lose a significant number of employees, conditioned upon their inability to perform professional duties, and accordingly successfully cope with the consequences of the pandemic and work according to the logistics that worked all the time of their work before the pandemic, according to the report of the International Labour Organization (ILO, 2020). Thus, provided that all agricultural enterprises observe such measures and are under clear control of the state, all representatives of the agroindustrial complex will be able to produce food products in normal volumes, not incur losses and pay wages to their employees on time and in full.

The irrational demand for basic food products has had a significant impact on the work of the agroindustrial sector. During the coronavirus pandemic, hoarding of essential food by households was common. At the same time, as noted by Chinese scientists Wang and Hao (2020), the motives for accumulating such food were both rational and irrational. Using random samples from an online survey of supermarket shoppers, rational and irrational motivations for food hoarding behaviour were investigated. The study found that demand for food was largely irrational, and therefore in excess, from the start of the pandemic. All this demand creates a corresponding supply, and this was one of the factors that influenced the mitigation of the consequences of the pandemic on the agricultural sector enterprises around the world conditioned upon the need to satisfy the excess demand of households.

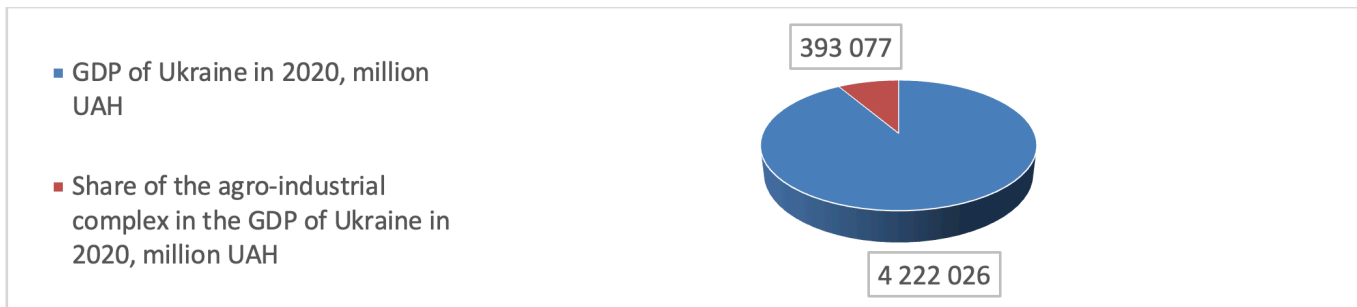
These results are confirmed by another paper by a group of Chinese scientists Lin and Zhang (2020), who found that all over the world, and therefore in European countries, on average, all agricultural enterprises experienced a decrease in exports, but the export of some agricultural products, especially grain, and oil, remained at the pre-pandemic level and even increased, which may indicate significant demand for staple foods during a pandemic. It should also be noted that the export of medicinal herbs increased significantly during the pandemic, which is not surprising because these crops

were mainly used as a basis for medicines needed by patients with coronavirus infection. The export of mushrooms and horticultural products decreased more than other crops. Also, according to the results, the pandemic mainly affected small companies, not large ones. Large companies were able to work in new realities and adjust the logistics of their production accordingly, which small companies were unable to do.

Scientists Zhou *et al.* (2020) highlight that sales reductions and constant price changes for major vegetable types in the context of supply chain disruption dominate overall losses during a pandemic. Such losses vary from country to country and are more significant in countries with more complex shipping routes and stricter restrictions. It is also necessary to consider that vegetables are the group of goods that have the greatest tendency to perish quickly conditioned upon delays in the export and delivery of this type of goods to stores. All this made vegetables a product that constantly changed in value, and most importantly, it changed not depending on weather phenomena and seasonality but explained by the biased consequences of the impossibility of timely delivery. According to Lai *et al.* (2020), the pandemic also had consequences for home farms around the world. Based on an online survey of household farms, the short-term impact was investigated, namely the immediate impact or short-term fluctuations, the immediate response of such farms, and the long-term impact for future periods. Severe pandemic restrictions such as village quarantine and poor awareness of the pandemic among farmers were found to affect mainly the short-term impact rather than the long-term impact. Farmers could not move between cities. This was a serious problem both for the purchase of necessary materials and for the sale of finished products to other cities. In addition, there was a decrease in demand from enterprises that buy products from farmers for the purpose of further resale. All this had a significant impact on home farms and many households were left without a source of income to support their livelihoods.

One of the researchers at the Institute of Agrarian Economics, Navrotsky (2020) claims that the pandemic had an impact on meat production in Ukraine. If in 2019 the average monthly price of beef in the retail trade was 135.66 UAH/kg, then in 2020 it rose to 157.22 UAH/kg, which is 15.9% higher than the previous year. This state of affairs proves that prices for products produced by the agroindustrial complex in Ukraine are unstable and prone to high volatility. However, a group of Ukrainian scientists, namely O.G. Shpikulyak *et al.* (2021), claim that the agroindustrial complex was the least affected by the pandemic, compared to other sectors of the Ukrainian economy. According to them, it was the agricultural sector that was one of the lifelines for Ukraine, which did not allow the GDP of Ukraine to decrease in the same way as many European countries. This is not surprising, because, in 2020, which was the peak of coronavirus restrictions, the share of the agroindustrial complex was equal to 9.3% of the entire GDP of Ukraine in 2020 and 2021, which makes it one of the locomotives of the national economy (Figure 2).

Figure 2. Share of agriculture in the GDP of Ukraine
Figura 2. Participación de la agricultura en el PIB de Ucrania



Source: compiled by the authors based on Ukraine's GDP in 2020 and 2021 (State Statistics Service of Ukraine, 2021). Fuente: elaboración propia en base a PIB de Ucrania en años 2020 y 2021 (State Statistics Service of Ukraine, 2021).

According to the statistical data shown in Figure 2, it can be seen that the share of agriculture in the Ukrainian economy is quite significant, and therefore the Ukrainian economy can be called dependent on the agroindustrial complex.

Conclusions

Therefore, it can be concluded that the agricultural sector suffered much less than other sectors of the economy both in Ukraine and in the EU countries. However, it should be noted that the agricultural sector in Ukraine, including the entire national economy, went through the crisis with smaller losses than the EU countries. This is explained by stricter quarantine restrictions in the EU countries and the dependence of these countries on labour migrants, who occupied a significant share of the labour force in agroindustrial complexes in the EU countries.

Nevertheless, it cannot be said that there were absolutely no consequences for agroindustrial complexes in these countries. Ukraine and the EU countries repeated the global trend of growing deficits in agricultural products and the corresponding increase in their value. It is also necessary to note that it was not the consumers of agrarian products who suffered primarily, but the workers of agrarian enterprises, as one of the most vulnerable sections of the population. State centralised bodies, in turn, were not able to cover the losses of such persons explained to the excessive pressure of the pandemic in other sectors of the economy. All this led to a drop in production and the financial situation of agricultural workers.

In the future, provided that the number of diseases is reduced, restrictive measures are reduced, and the logistics of production and supply of agricultural products are correctly and effectively adjusted during the pandemic, the agricultural sector should restore previous production volumes, and price volatility will be more stable, and workers of agroindustrial complexes of Ukraine and EU countries will be able to produce products and receive funds to cover their needs. It is already possible to see how statistical data depict the recovery of the agricultural sector of Ukraine and EU countries conditioned

upon the reduction in the number of diseases. The results of this scientific research, as well as the conclusions formulated on their basis, can be used in the development of programs for the development of agribusiness and rural areas, and programs for the mutual development of large-scale producers and local authorities.

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