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GLOBAL AGRI-FOOD MARKET: CONSUMER TRENDS AND TRADE PROBLEMS

Abstract. It is determined that the problem of food security, both for individual countries and for the world community as a whole, has been significantly exacerbated by interconnected global environmental, economic and social upheavals with rapid technological transformation of the industry combined with significantly growing global food demand and changing consumer preferences. These processes are taking place against the background of the global economic downturn caused by the COVID-19 pandemic. The consequences of the outlined factors on the international agri-food market are analyzed, namely the introduction of additional trade restrictions, rising food prices and disruptions in the global supply chain, etc. These and other negative trends within the global food market reduce the physical availability of food and reduce people's quality of life. The object of research is the processes of development of the global market of agri-food products. The subject of research is the dominants and mechanisms of formation of the global market of agri-food products. The purpose of the work is a comprehensive assessment of the global agri-food market in terms of the transformation of consumer priorities, taking into account the turbulence of the international economic space. The task of the research is to determine the global dominants and trends in the development of the agri-food market, to assess the integration prospects of Ukraine into the world agri-food market. The following methods of scientific research were used to achieve the goal and solve the problems of the article: the method of system analysis, forecasting, generalization. The scientific novelty of the obtained results is to provide a comprehensive assessment of the current state of the international agri-food market in terms of key factors and determinants of its development with further construction of the optimal model of economic cooperation between Ukraine and its international trading partners which is based on the obtained results. The study also further developed a systematic assessment of the agri-food market of Ukraine, which is dynamically integrated into the global market and is characterized, on the one hand, by strengthening the leading position of Ukrainian producers in a number of product positions and geographical structure of trade relations in the world market, and on the other hand, by the disparity between exports of raw materials and finished products.

Keywords: agri-food market, world economy, globalization, international trade.

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ГЛОБАЛЬНИЙ АГРОПРОДОВОЛЬЧИЙ РИНОК: СПОЖИВЧІ ТЕНДЕНЦІЇ ТА ПРОБЛЕМИ

Анотація. Визначено, що проблема гарантування продовольчої безпеки як для окремо взятих країн, так і для світової спільноти загалом, значно загострилась унаслідок взаємопов'язаних глобальних екологічних, економічних і соціальних потрясінь з одночасним стрімким технологічним трансформуванням галузі у поєднанні із суттєво зростаючим світовим попитом на продовольство і зміною споживчих уподобань. Зазначені процеси відбуваються на тлі падіння світової економіки, викликаного пандемією COVID-19. Проаналізовано наслідки окреслених чинників на міжнародний агропродовольчий ринок, а саме введення додаткових торговельних обмежень, зростання цін на продукти харчування та збої у глобальних ланцюжках їхніх поставок тощо. Ці та інші негативні тенденції в межах глобального продовольчого ринку зменшують фізичну доступність харчування і знижують якість життя людей. Об'єктом дослідження є процеси розвитку глобального ринку агропродовольчих товарів. Предметом дослідження — доміанти і механізми формування глобального ринку агропродовольчої продукції. Метою роботи є комплексна оцінка глобального агропродовольчого ринку в розрізі трансформації споживчих пріоритетів з урахуванням турбулентності міжнародного економічного простору. Завданням наукового дослідження є визначення глобальних доміант і тенденцій розвитку ринку агропродовольчої продукції, оцінка інтеграційних перспектив України у світовий агропродовольчий ринок. Для досягнення мети і вирішення завдань були використані такі методи наукового дослідження: метод системного аналізу, прогнозування, узагальнення. Наукова новизна одержаних результатів полягає в наданні комплексної оцінки сучасного стану міжнародного агропродовольчого ринку в розрізі ключових факторів і детермінант його розвитку із подальшою побудовою на основі отриманих результатів оптимальної моделі використання потенціалу економічної співпраці між Україною та її міжнародними торговельними партнерами. Також у дослідженні дістали подальшого розвитку системна оцінка ринку агропродовольчої продукції України, який динамічно інтегрується у глобальний й характеризується, з одного боку, зміцненням лідируючих позицій українських товаровиробників за низкою товарних позицій і географічною структурою торговельних відносин на світовому ринку, а з другого боку — диспропорцією між експортом сировини і готової продукції.

Ключові слова: агропродовольчий ринок, світова економіка, глобалізація, міжнародна торгівля.

Формул: 0; рис.: 1; табл.: 2; бібл.: 24.

Introduction. The importance of harmonizing the development of the agri-food market is determined by the significant number of fundamental functions it performs. At the same time, the international agri-food market faces a set of complex production and distribution issues. In particular, the need to double agricultural productivity (expected world population growth should double food demand by 2050) [1]), to correct and prevent trade restrictions and distortions in world agricultural markets, ensure the proper functioning of food markets and their derivatives and facilitate timely access to market information in order to limit food price volatility. Achieving these goals requires a radical overhaul of global food production and consumption patterns. These aspects determined the relevance of the choice of research topic.

Analysis of research and problem statement. The works of such scientists as L. Antoniuk, D. Bell, D. Hosh, T. Elvin, V. Vlasova, H. Voronina, A. Halchynsky, O. Dobrosotsky, S. Demianenko, T. Zinchuk, D. Ilnytsky, M. Kastels, S. Kovalchuk, S. Kvasha, A. Kolesniak, O. Kovtun, P. Korvo, M. Kramer, E. Lihon, I. Lozynska, R. Lohosha, D. Lukianenko, P. MakMaikl, A. Malov, R. Maltus, T. Melnyk, P. Parvati, B. Paskhaver, A. Poruchnyk, L. Preston, V. Rokocha, P. Sabluk, O. Skydan, R. Spilsbari, A. Starostina, Ya. Stoliarchuk, A. Shlapak, O. Shnyrkov etc. deal with the research of the issues determining the tendencies of development and structuring of the global food market.

The purpose of the article is a comprehensive assessment of the global agri-food market in terms of the transformation of consumer priorities, taking into account the turbulence of the international economic space.

Unsolved aspect of the problem is to substantiate the directions of optimization of foreign trade relations of domestic producers within the global market of agri-food products.

Research results. The current level of food supply to the world's population, which has more than doubled in the last 50 years, does not allow to achieve the goals of sustainable development related to the fight against hunger and poverty as well as improving the quality of life or introducing saving systems of land-use. Despite the steady growth of food production around the world, the number of people experiencing its shortage is also increasing. Agriculture produces 24% of greenhouse gas emissions, consumes 70% of freshwater and has caused 60% loss of vertebrate biodiversity since the 1970s. According to the Food and Land Use Coalition, these negative externalities result in \$12 trillion in losses each year [2]. The food-poor population is currently joined by another 100 million people who are experiencing food access problems as a result of the COVID-19 pandemic, which could lead to widespread hunger, according to the report «Pandemic, Recession: Global Economy in Crisis» from June 2020 [3]. The impact of this pandemic on world agricultural and food markets is becoming increasingly apparent. It is manifested in an unfavorable macroeconomic environment, changes within the energy, credit markets, commodity prices and so on. Existing trends have certain signs of a global crisis — the Great Recession [2]. The new projected economic conditions are likely to have a significant impact on food demand, food access and food quality over the next few years. The contrast between farm surpluses and shortages in retail markets during lockouts due to COVID-19 underscores high transaction costs and information asymmetry. Industry stakeholders are in a situation where their access to relevant information is limited.

International trade can play a particularly important role in adaptation efforts, contributing to the food security of many countries. In the short term, by moving food from surplus to deficit areas, trade can provide an effective mechanism to address production shortages. Integration processes within the global agricultural market should strengthen the adaptive role of trade in terms of increasing access to food and the impact on the distribution of profits and losses between producers and consumers. Many key players in agricultural trade note the resumption of growth in exports and imports in contrast to the stagnation that was observed in 2015/16 [4]. Changes in the structure of

exports clearly emphasize the growing importance of developing economies in world agricultural markets although the top of the ranking of exporters is traditionally occupied by the European Union and the United States. At the same time, Brazil, China, Indonesia, India have significantly increased their trade potential of agricultural products on the global stage, and continue to increase it (*Table 1*) [4].

Table 1

Dynamics of agricultural exports of the world, million dollars USA

Countries	Year							
	2013	2014	2015	2016	2017	2018	2018 to 2013, %	2018 to 2017, %
World	1445339	1479958	1329759	1351779	1474227	1532499	106.0%	104.0
European Union (28)	567670	574999	503654	518056	558729	586457	103.3%	105.0
United States	141891	149139	132962	135280	137279	138991	98.0%	101.2
Brazil	82259	79081	70982	67998	77612	80749	98.2%	104.0
China	59983	63494	63173	66205	68998	71548	119.3%	103.7
Canada	47105	49587	46799	46163	48977	50406	107.0%	102.9
Indonesia	31939	35389	32256	32188	39136	36852	115.4%	94.2
Thailand	29368	30848	28543	28660	31815	34024	115.9%	106.9
Mexico	23759	25085	26205	28480	32091	33987	143.0%	105.9
India	37429	36003	29954	29062	34374	33865	90.5%	98.5
Argentina	41326	37184	34036	36379	34928	33520	81.1%	96.0

Imports of agricultural products from the top five importers (EU, China, USA, Japan, Canada) also increased (*Table 2*) [4]. However, emerging economies have also become increasingly important in terms of restructuring imports. Less developed countries are characterized by faster growth of imports of agricultural products rather than exports. In particular, China imports more and more agricultural goods every year, which is due to the rapid increase in the country's population and processing capacity and indicates a continued trend.

Table 2

Dynamics of imports of agricultural products from around the world, million dollars USA

Countries	Year							
	2013	2014	2015	2016	2017	2018	2018 to 2013, %	2018 to 2017, %
World	1756648	1798003	1595449	1598255	1748295	1831431	104.3	104.8
European Union (28)	665304	674332	592827	602952	649620	686543	103.2	105.7
China	165476	170708	159621	154859	180901	195168	117.9	107.9
United States	146160	157010	156706	159137	169669	179855	123.1	106.0
Japan	85994	81924	74119	73888	79021	82716	96.2	104.7
Canada	38772	40146	38216	37656	39067	40352	104.1	103.3
South Korea	33386	34994	33046	32491	35067	38482	115.3	109.7
Russian Federation	44726	41216	27519	25947	30097	30948	69.2	102.8
Mexico	29202	30027	27655	27685	29249	30638	104.9	104.7
Hong Kong	27816	29195	27468	28389	28906	30114	108.3	104.2
India	24418	27316	27718	29029	32991	28246	115.7	85.6

An important issue is the ability to meet food needs through its world reserves. One of the key indicators is the number of grain stocks held worldwide and their «liquidity», i.e. availability for procurement on the global stage. At the beginning of the COVID-19 pandemic in 2020, they reached a multi-year high [5]. Based on the first FAO forecasts for production in 2020 and consumption in 2020/21, world grain stocks will reach a new record of 927 million tons, an increase of 5% (44 million tons) compared to the previous year. At the same time, a certain increase in their volumes is even expected — from 32.5% in 2019/20 to 32.9% in 2020/21. However, in addition to the absolute level of stocks, their distribution by countries, exporters and importers is no less important, and, especially, their concentration and localization. Of the total grain stocks, 47% will

be kept in China, where national stocks may increase for the second season in a row and reach a new high of at least 439 million tons. At the same time, there is no significant increase in grain prices on the global market. This year's grain price index is close to the level in the corresponding month last year [2].

In general, the largest share in the structure of international trade in goods is occupied by corn, soybeans, sugar and wheat. These crops are expected to continue to grow in demand due to population growth. They are characterized by flat cost curves, which means that small changes in market dynamics can have a significant impact on the competitiveness of exports. It should also be noted that due to the widespread production of wheat, it is sold at shorter distances than the other three crops, which leads to a significant sensitivity of trade efficiency depending on turbulent external conditions.

The largest consumer of wheat per capita in the world is the Black Sea region (according to the EU, it is the Black Sea coastline with a width of about 20—60 km wide of all surrounding countries [6],) followed by the EU. In Europe, the level of wheat consumption is steadily increasing over time, mainly due to the development of animal husbandry. In South America and the United States, wheat consumption is lower (70 and 115 kg per capita, respectively), because corn is more popular as a food product for the population in the region and soybeans are mostly used as fodder in Africa and Asia, wheat consumption is in line with global trends and is also due to population growth. Four regions provide the world with wheat: the EU, the Black Sea region (mainly Ukraine), North America and Oceania.

North America today is the largest consumer of corn with a level of about 900 kg per capita. The driver of consumption in South America is, in particular, increased poultry production. Like wheat, the global significant increase in corn consumption is associated with increased livestock production and, more recently, with corn-based ethanol production. About 15% of the corn grown in the world is a commodity on the international market. Its main suppliers are South, North America and the Black Sea region. South America exports up to 40% of its needs. South America and the Black Sea region (mostly Ukraine) have significantly expanded their exports over the current decade. The largest importer of corn is the EU [7].

The main reason for the increase in soybean production over the past two decades has been the increase in meat consumption worldwide, especially in China. This is due to the use of soybeans as animal feed, especially in North and South America. Total soybean exports in these regions almost doubled from 2008 to 2018 (from 73 million tons to 143 million tons). Both Americas have significantly expanded their production over time, focusing on export markets. The EU is the main destination for soybean meal, which accounts for 30% of world trade. China is currently the largest importer of soybeans in the world [8]. The constraining factor in providing the country with these products of its own production is the limited water resources. However, with the reduction of energy costs for water desalination, additional small arable land may be involved in growing products. At the same time, this can significantly affect the structure of international trade, namely up to a ten percent reduction in world trade in this culture [8]. Another reason for the growth of soybean production is the popularization and spread of veganism and vegetarianism. In response to today's challenges, companies within the food industry must assess the prospects of entering the market of «alternative» meat.

Increasing incomes in developed and developing countries have led to an increase in the consumption of higher value products such as meat and dairy products. In the current decade, meat consumption growth is slowing in Asia and Africa. The consumption patterns will remain stable in the EU and South America and will be strengthened in North America. The EU is currently the largest consumer of pork per capita. Currently, less than 8% of world pork production is sold, and more than 80% of exports come from North America and the EU [9]. In both regions, the formation of surpluses of this product is monitored. In South America, its surplus has fallen below 10% over the current decade, mainly due to rising domestic consumption.

At the same time, growing social and environmental problems in developed economies have affected consumer preferences, leading to a reduction in red meat consumption. Instead, the

consumption of poultry meat is growing significantly in all regions of the world and wins compared to other types of meat (especially beef), given its price. Its largest consumer is North America. The EU and North America are leaders in dairy imports of approximately 270 kg per capita [7]. Successful local, regional and global food companies in these markets are using increasingly sophisticated technology to adapt to local tastes and preferences.

In parallel with the problem of hunger on the planet, the spread of obesity is gaining momentum. Currently, about two billion people are overweight, which leads to exacerbation of non-communicable diseases of dietary origin. These trends significantly affect the formation of international trade relations in the sugar market. Unlike other crops, the level of its consumption is quite stable around the world. The largest consumer is South America (over 50 kg per capita). Consumption in the EU (37 kg per capita) exceeds its level in North America (30 kg) not only because the EU processes more sugar into ethanol, but also due to lower use of other sweeteners such as isoglucose [7; 10]. In Asia and Africa, sugar is used only as a food.

Due to the spread of the trend to fight overweight in the world, global consumption of fruits, vegetables, nuts and legumes should double, while the consumption of products such as red meat and sugar will decrease by more than 50%. If the trend continues, it could potentially affect major exporting countries such as Australia, Brazil, India and Thailand [11]. Given the production relationship between sugar and ethanol, this will also be reflected in the biofuel market [8]. In particular, reducing sugar consumption will free up resources to increase ethanol production and supply, reducing its price in the short term.

The rapid development and introduction of digital technologies is one of the key drivers of accelerating the transformation of the food system. They are increasingly prevalent in the agricultural value chain, reducing information asymmetry, ensuring transparency and bringing production profitability to new highs [12]. At present, the division of the agricultural sector into types depending on the level of its technological equipment can be stated [13]. The first type is determined by the active use of herbicides, pesticides and other chemicals. The next type is modern agriculture, which includes new generations of plant protection products and the latest methods of mechanization of processes. The most developed one is considered to be precision agricultural production [14]. It is common in the European Union, North America, etc. This type is characterized by the active use of biotechnology, gene editing and robotics, which will allow more accurate tracking and implementation of agricultural technologies.

Climate change, trade wars, new technologies and transformations of consumer preferences can lead to a revolution in production and business processes in the industry under study. The introduction of modern digital technologies, among other things, creates the conditions for the most effective and transparent pricing mechanisms. Providing tracking in the chain of value added of food products through digital platforms creates the conditions for freer access to information and optimization of processes within the industry. In order to maximize the success of the introduction of digital technologies, an appropriate institutional field should be formed at the expense of state policy aimed at deconcentration of markets and supply chains, decentralization, traceability and dissemination of data, etc. Subsidies and export tariffs can change market dynamics and the competitive position of countries around the world. Trade restriction measures will slow down overall economic growth and international trade in goods in general and agricultural products in particular.

Decentralized tracking of products throughout the supply chain creates opportunities for doing business taking into account the requirements of sustainable development, in particular organic agriculture [15; 16]. Environmentally friendly production technologies are becoming increasingly common in the international market. Their rapid spread is due to a number of advantages of such production technologies [17]. In particular, products of organic origin, in addition to environmental and social preferences, have a number of economic incentives.

Ukraine's position on the international market of agri-food products is growing stronger. Exports of agricultural and food products account for 19% of the total value of Ukraine's exports and continue to grow [3] (*Fig.*). Currently, domestic agricultural producers have 1st place in the

production of sunflower seeds, 3rd place in the export of honey and 4th — in the export of corn on the world food market. In the world production of the main types of agricultural products, the share of Ukraine is about: 20% of sunflower production; 4% of sugar beet production; 3% of rapeseed production; 2% of grain production, including 8% barley and 3% wheat; 2% of cow's milk production; 1% of pork, beef, poultry production [18]. All these items are raw materials, indicating the extensive nature of the development of the domestic agricultural sector.

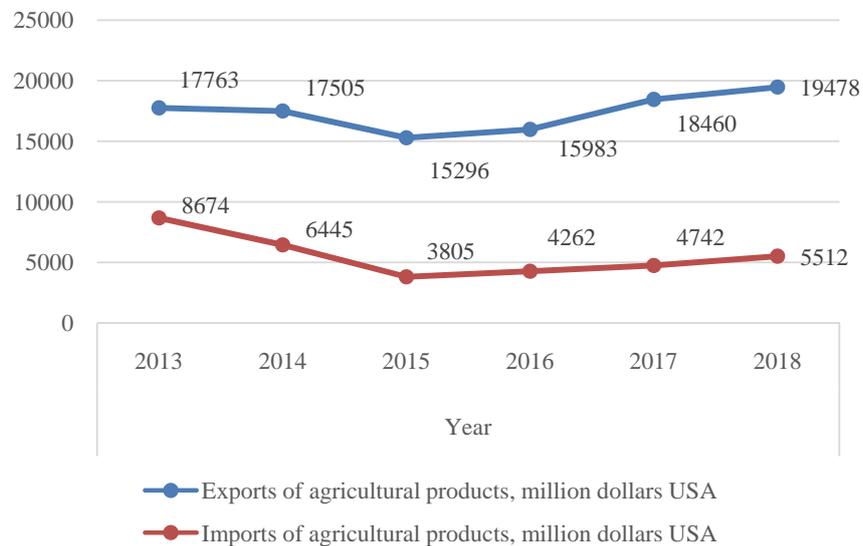


Fig. Dynamics of exports and imports of agricultural products in Ukraine

Over the past five years, the geographical distribution of Ukraine's agricultural exports has expanded significantly as the country's agribusiness has gone beyond traditional markets and focused its efforts on expanding its presence in Asia, Africa and other regions. As of 2019, China was the main market for Ukraine (8.9% of total agricultural exports). The next four places were taken by India (8.3%), Egypt (8.2%), Turkey (7.6%) and the Netherlands (7.1%, respectively). Grain is currently the main commodity exported by Ukrainian producers. In recent years, access to new international consumers has been gained, and Ukrainian food exporters have entered 85 new markets for a variety of agricultural products in 2018. In 2019, Ukraine received the necessary phytosanitary certification to begin exporting milk and dairy products to Saudi Arabia [19]. Such a rapid increase in export potential is due to the partial reorientation of trade relations from the markets of Central Asia. Not the least role was also played by the modernization of agri-food production, which led to increased yields with the simultaneous development of infrastructure capacity. Currently, the urgent issue is to create conditions for the production of products with increased added value. Processing of raw materials by Ukrainian enterprises would allow them to receive a larger share of final income and further stimulate the country's economy.

Ukraine ranks 1st in terms of agro-export growth to EU member states and is among the TOP-3 largest agricultural exporters to Europe, emphasizing the benefits gained from the Association Agreement between Ukraine and the EU in 2014. At the same time, the first and second positions were taken by the United States and Brazil. A significant increase in the effectiveness of cooperation between Ukraine and the EU occurred after the conclusion of the above-mentioned Agreement as a result of the creation of a deep and comprehensive free trade area (FTA) [10; 20]. About 300 domestic producers of livestock products are licensed to export to the EU. The main export groups of goods are raw materials including cereals, oilseeds, fats and so on. The key areas of bilateral cooperation in the field of agriculture are: organic farming, standardization of trade in crop products and food quality policy [21—24]. Given this, the EU is a priority partner of Ukraine.

Conclusions. The development of the global agri-food market is one of the key issues of today. Its operation takes place against the background of turbulent international events of an

economic, social and political nature. The dominants of the industry transformation are currently permanent technical and technological re-equipment, application of digital technologies, restructuring of business models, etc. This leads to the restructuring of export-import relations, changes of key players in the international arena.

As a result of the study, key trends in the industry were identified. Despite the positive dynamics of production and trade processes, there is a trend of more rapid growth in demand for food with an increasing share of the population experiencing food shortages. The duality of the development of society and its economic well-being is manifested in such a way that the growing hunger problem is paralleled with the problems of overweight, and one of the key factors in the formation of world agricultural production and distribution is changes in consumer preferences. They are currently characterized by an increase in the consumption of protein products, which is typical for both developing countries and countries with developed economies. Consumer demand for food varies depending on income and regional cultural preferences. There is a tendency to reduce the segment of more expensive food products compared to cheaper ones.

Ukraine's potential in providing agro-food products to the world's population is growing. This is manifested in the leading positions of Ukrainian producers in a number of product positions and the geographical structure of trade relations in the international arena. Given the rate of increase in bilateral trade, one of the priority partners for international cooperation for Ukraine is the EU. However, currently this applies only to raw materials, which determines the future prospects for development of the domestic agro-industrial complex in terms of establishing processing capacity and further expansion of the world market.

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