Changes in the Organic Products Market as a Result of the 2022 Events in Eastern Europe

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Abstract: Organic products markets will be affected by the food crisis, changes in the structure of consumer demand, rising food prices, and the migration of Ukrainians due to Russian aggression. This article aims to identify possible changes in the organic products markets due to the events of 2022 in Eastern Europe. Methodology. The main research methods included analysis and synthesis, comparison, and statistical analysis of organic markets of EE countries (Bulgaria, Czech Republic, Hungary, Poland, Romania, and Ukraine). The analysis was carried out according to the following criteria: key market indicators (land area, producers, exporters, importers, retail sales), development history; institutions; market development indicators, including export and import; standards and legal framework; state support policy. The databases used for the analysis are Eurostat (2022), Research Institute of Organic Agriculture by FiBL (2022), and 2008-2020 data. The results indicate possible changes in the organic products market due to the events of 2022 in Eastern Europe: 1) possible market growth for organic products in the countries with the highest refugee arrivals (Poland, Romania, Bulgaria, Moldova) and for Ukraine to overcome the food crisis; 2) a significant increase in prices of organic products due to increased demand for food and food crisis, higher energy costs; 3) market growth in Poland and the Czech Republic as the most developed among the EE countries due to increased demand for products in the importing countries (Germany, Italy, France and Spain); 4) possible reduction of organic food production due to reduced demand due to increased consumption of essential goods; 5) through the active provision of financial assistance to Ukraine to meet nutritional and humanitarian needs, EE countries reduce the financial capacity to support organic producers and their subsidies level.

Key-Words: organic products, organic food market, organic production, organic consumption, food crisis

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1 Introduction

Over the past ten years, since 2009, the organic products market of different countries in Europe has gradually grown, in particular, due to policies aimed at promoting the sustainability of the agricultural sector in the context of the sustainable development concept (Brzezina, Kopainsky & Mathijs, 2016; Liulov et al., 2020) and government support to stimulate the development of the organic market (Escribano, 2016). Such growth, in particular, is enhanced by trends in demand and product consumption per person. From 2009-2019 there was a positive trend of increase in the number of producers (by 57.6%), especially in the most developed countries of Europe (Eurostat, 2021a). The share of organic producers in the EU is 14% of the number of world organic food producers (FIBL&IFOAM. Organic International, 2021). The market for organic products in Europe specializes in the production and consumption of cereals, wheat and spelt oats, and a mixture of spring cereals, green plants, and fresh vegetables. The main challenges of the organic market until 2022 remained insufficient production to meet consumer demand, poor production efficiency, in particular, in the least developed countries of Europe, and the problems of implementing innovative alternative production practices in organic farming (Vincent-Caboud et al., 2017). Due to the events of 2022 (Russian military aggression against Ukraine, European sanctions against Russia, increased refugee flows, food crisis), these problems will be significantly exacerbated, in particular, due to the food crisis in Eastern Europe, caused by the need to provide food for millions of refugees and temporarily displaced people. According to Willer & Lernoud (2018), almost 2.6

million hectares, or 21% of the EU's organic farmland (12.1 million hectares), were located in Eastern Europe (EE) in 2016. It means that the EE countries have a significant impact on the transformation of the organic market after the 2022 events. According to available data, the organic EE market is at least 524 million euros (Willer & Lernoud, 2018), but the EE organic market is a market segment that is particularly underdeveloped (Moellers, 2014). Until 2022, the organic sector in the EE countries was slower to develop than in the EU as a whole. Organic area and production development did not match similar market development or product processing infrastructure (Willer & Lernoud, 2018).

The events of 2022, among which the main are the food crisis, changes in the structure of consumer demand, rising food prices, and the migration of Ukrainians due to Russian aggression, will be reflected in the organic products markets. Therefore, it is relevant to explore the transformations in the organic food markets due to the events of 2022 in Eastern Europe.

This article aims to identify possible changes in the markets for organic products due to the events of 2022 in Eastern Europe.

2 Literature Review

The scientific literature actively investigates the formation and development of organic products markets in the EE region, in particular, the main research occurs between 2011 and 2015. During this period, there is the formation of the legal framework, institutions, and policies of state support for organic food producers, which is associated with the accession of EE countries to the EU. The characteristics of the organic products markets of the CE are an excess of production over consumption, lack of raw materials for domestic processing of organic products, and imports of processed organic products, which leads to a negative impact on local development projects.

Based on a study of the organic market in Eastern Europe, Gauvrit & Schaer (2013) found that the markets of Poland, Hungary, Czech Republic, and Romania are the main in terms of turnover. According to another study, the size of the organic market of EE countries was €260 million in 2011 (Jansen & Schaer, 2012). The markets have developed with different dynamics in terms of turnover: in Bulgaria and Poland, the market grew five times from 2006 to 2010; in the Czech Republic and Romania, the market grew four times from 2006 to 2020; in Estonia, the market has doubled over the same period; almost no market growth in Hungary and Slovakia.

Jansen & Schaer (2012), Gauvrit & Schaer (2013) systematized the main characteristics of the organic market of the EE countries: the Czech Republic market is the most developed; Poland and the Baltic countries show the highest growth rates, including their production; the markets of Ukraine, Bulgaria, Romania - the giant markets, which began to quickly develop local organic markets and where growth is traced to lower levels; Hungary is growing at the lowest rate. In general, there is an intensification of local organic markets development processes in the EE countries, in particular export-oriented ones (Jansen & Schaer, 2012; Gauvrit & Schaer, 2013). At the same time, the main problem of EE markets is the development of small farming, its access to foreign markets, and the construction of effective marketing channels. As Moeller's (2014) study on the organic market development in Romania shows, small farms face extraordinary difficulties in the formal market channels development, so they are focused on the production of the goods for their residence and informal sales. From the consumers' point of view, this lack of market orientation leads to the need to rely on food imports.

The scientists identify (Willer & Schaack, 2015; Shivarov, 2017) among the main challenges for the development of the organic market in EE countries the following: the problem of motivating and training farmers for technological organic production, ensuring supply chain efficiency, providing economies of scale from product processing and retailing, informing consumers and incentives to purchase organic products, consolidating support policies, explaining labeling and product certification.

Research on organic markets in CEE countries in recent years indicates some positive developments. Willer & Schaack (2015) note that the accession of new countries to the EU after 2004 (including Poland and Romania) ensured the growth of the organic production area. On the other hand, thanks to the state support formed by the EU, organic farming in the EE countries began to grow. Willer, Schaack & Lernoud (2019) identified a growing trend of organic markets and slow growth of organic areas in the EU overall. Shivarov A. (2017) identified differences in CEE organic markets in terms of customer attitudes towards organic products and their income levels, production and distribution models, and export orientation. Pawlewicz, Brodzinska, Zvirbule & Popluga (2020), based on FiBL data from 2000 to 2017 for Poland

and Latvia, analyzed trends in organic farming. The authors found an acceleration of organic farming in both countries after accession to the EU and covering organic farming with the CAP support system. However, in Poland, there are excellent indicators of the number of organic farms and their area with the simultaneous organic food market development in the country.

As part of the Research Institute of Organic Agriculture carried out a study of organic markets in Eastern Europe in the works by Apostolov S. (Bulgaria), Hrabalova A. (Czech Republic), Dezseny Z. and Drexler D. (Hungary), Metera D. (Poland), Megyesi B. (Romania), Prokopchuk N. and Eisenring T. (Ukraine). The mentioned scientific publications systematize the information about the key indicators of market development, history of markets formation, regulatory institutions, production base and market indicators, standards and legal framework, market support policy of the state, and main challenges. Table 1 presents a synthesis of the key findings of these studies in the context of the EE countries.

Therefore, in Bulgaria, the market started to develop in 2008 when more than 1,500 shops selling organic products were established, the first mechanism of "compensatory payments available for organic farming under measure 214 of the national rural development program" was developed, and the Bulgarian organic farm was established in 2009 (Apostolov S., 2012). Bulgaria adopted a National action plan in 2007-2013 with a budget of €82 million, which provided the management of 8% of agricultural areas through organic farming until 2013 and a share of 3% of organic production by 2013. Bulgaria also implemented support mechanisms under EU rural development programs, namely compensatory payments since 2008, the amount of which depended on the specialization (the highest payments for orchards and vineyards (€729 per hectare), lower - for pastures and meadows (€120 per hectare). "Payments for organic apiculture are EUR 18.5 per beehive. Additional points are given to organic farmers for investments and the projects of young farmers" (Apostolov, S., 2012).

The Czech Republic's organic market is the most developed among the EE countries, due to the state policy, which provided institutional regulation, in particular, the state financial support. According to a study by Hrabalova A. (2012), the Czech market grew significantly in 2005-2008, followed by stagnation due to the financial crisis. The Czech Republic specializes in dairy products, baby food, fruits, and vegetables. The country has developed market channels: general retailers (supermarkets/hypermarkets, 65%), specialized stores (20%), direct marketing, mainly from farms and other forms of direct sales (5%), pharmacies (5%), drugstores (3%), independent small stores (1%), gastronomy (1%). The Czech Republic also exports a significant share of its products (25%) to the EU.

Table 1. The key features of organic markets in Bulgaria, the Czech Republic, and Hungary, according to scientific publications

Criterion	Country		
	Bulgaria	Czech Republic	Hungary
Key development indicators (2012)	Agricultural area: 39,138 hectares. Organic producers: 2,754 Organic processors: 81 Organic importers: 1 Organic exporters:14 Retail sales: EUR 6-8 million (2009),	Agricultural area: 488,658 hectares. Organic producers: 3,934 Organic processors: 545 Retail sales: EUR 66 million (2011)	Agricultural area: 130,609 hectares Organic producers: 1,560 Organic processors: 414 Organic importers: 14 Retail sales: EUR 25 million
Development history	From 1987 when the Agroecological center was established, active development since the early 2000s (legal framework, certification, institutions), with its peak development in 2008	Since 1993 on the implementation of the national directive, in 2001, the adoption of the law on organic farming, in 2004, the law on financial support, in 2006, new regulatory authorities, 2010: Action Plan for Developing Organic	Since 1983, in 1990 Hungary was included in the EU Regulation (EEC) No. 2092/91, in 1992 the Center for Rural Development was created, in 1996 the regulatory authorities were established, in 2002 the certification procedures were approved

		Farming in 2011-2015	
Institutions	Ministry of Agriculture and Food (MoAF), Bulgarian organic products Association (BOPA), Foundation for organic agriculture, Bioselena, Bulgarian organic trade association, Agricultural University Plovdiv:	Inspection body: KEZ, ABCERT AG, Biokont CZ. UKZUZ, Central Institute for Supervising and Testing in Agriculture, PRO-BIO Association of organic farmers, Bioinstitut (Institute for Organic Agriculture and Sustainable Landscape Development), ČTPEZ (the Czech Technology Platform for Organic Agriculture)	Biokontroll and Hungaria Oko Garancia, the two Hungarian inspection bodies, Biokultura Alliance, advocacy for organic agriculture, regional associations, KOSZ (Organic Farmers' Association in the Carpathian Basin), Kishantos Rural Development Centre, OMKi (the Hungarian Research Institute of Organic Agriculture), MOSZ (Association of Hungarian Organic Farmers)
Production base: land use and key crops	The total organic area 39,138 hectares (2012)	Organic agricultural area is 488,658 hectares (2012)	The total organic area of 130,609 hectares
Market	Both production and the market are growing rapidly, but organic producers continue to mainly export raw materials (90% is export)	A significant increase in the organic market in 2005-2008, stagnation in 2011,	Organic products in Hungary have only a small market share (less than 1%).
Exports and imports	Most of the organic products (about 90 %) are exported to Central and Western European countries, North America, and Japan	25% of exports to the EU and Australia	About 85 % of the organic production is exported.
Standards, legislation, organic logo	EU legislation on organic farming and other regulations directly applicable in Bulgaria. The national ordinance N. 1/2013 regulates the work of the control bodies.	Act No. 242/2000 on organic farming, Decree No. 16/2006 sets out the rules of usage for the national organic logo.	EU legislation on organic farming and other regulations are implemented, and the decree on organic certification, production and distribution and labelling applies
Policy support	National action plan, Support under EU rural development programs from 2008	National action plan, Support under EU rural development programs, Other policy support: Support from the Ministry of Agriculture for promotional and education events	National action plan, Support under EU rural development programs

Source: Systematized by the author based on Apostolov S., Hrabalova A., Dezseny Z. and Drexler D.

The market for organic products in Poland began to develop in 1980 and developed based on the national policy until the EU accession in 2004. The market in Poland is characterized by slow steady development. The organic market is characterized by processed goods imports, as the state processing industry is the basis of market development. Due to changes in the subsidies system under the new

common EU agricultural policy in 2014, the area of organic lands use in Poland has decreased.

Table 2. The key features of organic markets in Poland, Romania, and Ukraine, according to scientific publications

Criterion	Country		
	Poland	Romania	Ukraine
Key development indicators (2012)	Agricultural area: 661,687 hectares Organic producers: 25,944 (2012) Organic processors: 312 (processors and traders) Organic importers: 30 Retail sales: EUR 146 million	Agricultural area: 288,261 hectares Organic producers: 15,315 Organic processors: 105 Organic importers: 3 Retail sales: EUR 80 million	No official statistics on organic farming exist
Development history	From 1980 with the introduction of technology, was established an association of organic producers in 1989, in 1990 - inspection control, in 1999 - a system of subsidies, in 2004, after accession to the EU implementation of EU programs	Since 1997 - creation of the first association of producers, 2000 - the first legislative act of regulation, 2001 - regulatory bureau, 2004 - the first inspection and certification procedure, 2005-2012 - regulatory authorities, 2010 - providing subsidies to farmers.	No data on history
Institutions	EKOLAND, the Association of Organic Producers, Forum Rolnictwa Ekologicznego im. M. Gornego, Forum of Organic Farming M. Gorny, Podkarpacka Izba Rolnictwa Ekologicznego, Lower Carpathian Chamber of Organic Farming	Organic Farmers Association of Romania Bioterra, EcoR Partner – Resource Centre for the Promotion and Marketing of Organic Products, Bio-Romania Association	Ukrainian certification body Organic Standard, the association of organic production stakeholders BIOLan Ukraine, the Organic Federation of Ukraine, the association of producers of organic products Pure Flora, the textile supplier Organic Era Trade House, the information center Green Dossier, 17 private certification bodies
Production base: land use and key crops	The total organic area is 661,956 hectares	The agricultural land is 288,261 hectares	
Market	The market for organic products is growing slowly but continuously; organic products can now also be found in conventional shops and supermarkets, rather than just specialized small organic shops.	The Romanian organic sector is highly export-oriented. The conversion subsidies have made organic farming more attractive, leading to strong growth in the certified area.	There is a growing interest and demand for organic products
Exports and imports	The key export products are mainly frozen berries, vegetables, and apple juice	The main export products are cereals, and collected wild mushrooms and berries. The	A lot of Ukrainian organic producers are export-oriented. The main export

	concentrate and cereals. The key imported products are processed products, exotic fruits, spring vegetables, and tea and coffee.	main import products are processed food.	market for Ukraine is the European Union.
Standards, legislation, organic logo	Organic farming is subject to both the EU legislation and other regulations, and the Polish act on organic farming of 25 June 2009, which introduced a certification system.	EU legislation on organic farming and other regulations apply.	The organic law in Ukraine has not yet been approved by the parliament.
Policy support	National action plan, Support under EU rural development programs	National action plan, Support under EU rural development programs, Romania's export strategy.	In October 2010, the Ministry of Agricultural Policy of Ukraine announced the support of organic production development as one of the priority areas of the Ukrainian agri-industrial sector for attracting international technical assistance.

Source: Systematized by the author based on Metera D., Megyesi B., Prokopchuk N. and Eisenring T.

Thus, scientific studies of the organic products markets of the EE countries show the presence of common features: the adoption of national development plans along with the programs of rural development of EU territories and general agricultural policy, a united system of subsidies, the presence of institutions and regulatory bodies, the lack of support programs for innovative development of organic production, slow market growth, and their small share. An exception is a Czech market, where the adoption of national legislation and the development of the law on financial support and the functioning of regulatory bodies provided a significant development of the Czech market. It should also be noted that the countries differ in the challenges that are specific to their markets, which are not addressed by the general EU policy.

3 Methodology

The study used the UN classification of Eastern European countries, namely: Bulgaria, Czech Republic, Hungary, Poland, Romania, and Ukraine. The countries were chosen due to the availability of data on the assessment of the main features and trends of the organic products markets for the years 2008-2020. It became the basis for determining the transformation of markets due to the events of 2022. The main methods of research selected: analysis and synthesis, comparison to systematize the features of the development of organic markets on the following criteria: key market indicators (area of land, producers, exporters, importers, retail sales), development history; institutions; market development indicators, including export and import; standards and legal framework; public policy support. Statistical analysis of the organic products markets of the EE countries was carried out, taking into account the availability of data in the context of the key evaluation indicators. Eurostat (2022); Research Institute of Organic Agriculture FiBL (2022) databases were used for the analysis. The main indicators for the analysis were selected: the number of market operators of organic products; organic industry in Europe; organic area representing a common farm in the EE countries; the share of organic production in 2020 in tons; organic retail sales in EE countries; share of organic retail sales; organic per capita consumption.

4 Results

Features and trends of organic markets development in EE countries

The literature analysis showed differences in the history of the formation of organic markets in the EE countries. In particular, the differences in

institutional, legal, and organizational nature and different levels of government support and incentives for production. These initial conditions have significantly influenced the development of markets in 2010-2020 and determined the potential for growth in the period of transformation or, conversely, will negatively affect the changes through the events of 2022.

The number of organic market operators increased in Bulgaria, the Czech Republic, Hungary, Ukraine from 2012-to 2020, while in Poland decreased by 4%, in Romania - by 5% (Table 3).

Table 3. Organic operators in Eastern Europe countries (from 2012 onwards, 2012-2020

Country	2012	2013	2014	2015	2016	2017	2018	2019	2020	Average growth rate, 2020/2012
Bulgaria	2 754	3 854	3 893	5 919	6 964	6 442	6 213	5 942	6 078	12%
Czech Republic	3 907	3 910	3 866	4 121	4 271	4 426	4 601	4 694	4 669	2%
Hungary	1 560	1 682	1 672	1 971	3 414	3 642	3 929	5 136	5 128	18%
Poland	25 944	26 598	24 829	22 295	22 451	20 276	19 224	18 655	18 598	-4%
Romania	15 280	14 553	14 151	11 812	10 083	7 908	8 518	9 277	9 647	-5%
Ukraine	164	175	182	210	294	304	501	470	419	15%

Source: Eurostat (2022a); Research Institute of Organic Agriculture FiBL (2022a).

The volume of organic crop area also differs in the EE countries. In the EU overall, there was a growth of 5% from 2012-to 2020 (Table 4), while in Bulgaria - by 23%, in the Czech Republic - by 2%, Hungary - by 12%, Poland - decreased by 3%, Romania - by 7%, and in Ukraine - by 9%.

Table 4. Organic crop area in Eastern Europe countries (Utilized agricultural area excluding kitchen gardens: total fully converted and under conversion to organic farming), 2012-2020, thousand hectares

Country	2012	2013	2014	2015	2016	2017	2018	2019	2020	Average growth rate, 2020/2012
European Union (EU27-2020)	10016,0	10070,6	10315,2	11105,9	11935,3	12560,8	13438,2	14252,9	14719,0	5%
Bulgaria	39,1	56,3	47,9	118,6	160,6	136,6	128,8	117,8	116,3	23%
Czech Republic	468,7	474,2	472,7	478,0	488,6	496,3	519,9	535,2	540,4	2%
Hungary	130,6	131,0	124,8	129,7	186,3	199,7	209,4	303,2	301,4	12%
Poland	655,5	669,9	657,9	580,7	536,6	495,0	484,7	507,6	509,3	-3%
Romania	288,3	286,9	289,3	245,9	226,3	258,5	326,3	395,2	468,9	7%
Ukraine	272,8	393,4	400,7	410,6	381,2	289,0	309,1	467,9	462,2	9%
Total share of EE countries, %	17%	18%	17%	16%	15%	14%	14%	14%	15%	-

Source: Eurostat (2022b); Research Institute of Organic Agriculture FiBL (2022a).

Despite the growth in the size of land under organic production, the share of farmland in the total land bank remains low, except in the Czech Republic, where the indicator is 14.74% in 2015-2020 (Figure 1). In Hungary and Poland, the indicator is 4.22% and 3.58%, respectively, in Bulgaria - 2.58%, Romania - 2.35%, and Ukraine - only 0.94%.

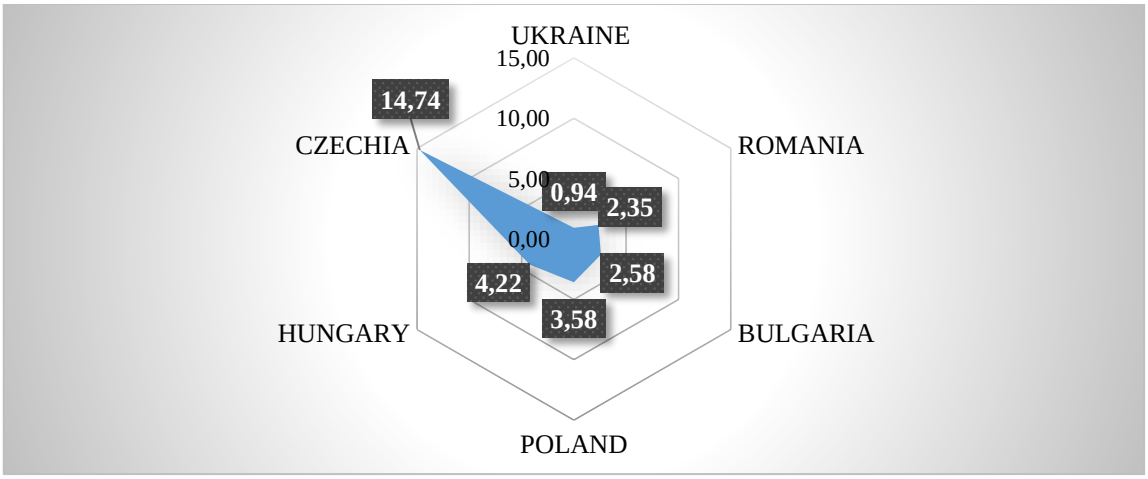

Fig. 1: Organic area shares of total farmland in EE countries, average 2015-2020, %
Source: Research Institute of Organic Agriculture FiBL (2022a).

The majority of EE countries' producers are specialized in the production of cereals, wheat and spelt, oats, and a mixture of spring cereals, green plants, and fresh vegetables (Table 5). Countries are classified by the share of organic production in 2020 in tons, which exceeds 10% of total organic crop production.

Table 5. The classification of countries by specialization of organic production in crop farming, 2020

Group of countries	Specialization (by the share of organic production in 2020 in tons, which exceeds 10% of total organic crop production)				
	Cereals for the production of grain	Wheat and spelt	Oats and spring cereal mixtures	Plants harvested green from arable land	Fresh vegetables
Bulgaria, Czech Republic, Hungary, Poland, Romania,	Average particle value 22%	-	-	-	-
Hungary, Romania	-	Average value 13%	-	-	-
Czech Republic, Hungary, Poland	-	-	-	Average value 36%	-

Source: Compiled by the author based on Eurostat (2021c).

The specialization in these countries is as follows: Bulgaria, Hungary, and Romania specialize in industrial crops (12%, 4%, and 10% respectively); Grain maize and corn-cob-mix are produced most in Hungary (5%) and Romania (10%); Bulgaria specializes in organic dried fruits and protein crops for the production of grain (13%, 4%, and 4% respectively). Organic fruits from temperate climate zones are grown in Hungary (6%) and Poland (5%). Grapes are grown in Bulgaria (5%). The specialization of the country does not depend on the part of agricultural land which is allocated in each country for organic cultivation and can be traced to the example of organic production of grain crops.

The feature of the organic market of EE countries is their internal orientation and the growth of domestic retail sales after the crisis periods. As evidenced by the data in Table 3, organic markets have grown

significantly in some EE countries, while in others, the growth rate was stable: 1) in 2010, after the 2008-2009 crisis (Bulgaria, Poland, and Ukraine) and the growth rate after 2010, was maintained until 2014 inclusive and the economic recession in 2014; 2) in 2015 after the economic slowdown in 2013-2014 (Bulgaria, Czech Republic, Poland, and Ukraine) and maintaining this growth rate until 2020; 3) stable growth of markets in Bulgaria, Czech Republic, Poland, Romania, and Ukraine in 2015-2020.

Table 6. Organic retail sales in EE countries, million euro, 2008-2020

Organic retail sales	2008	2010	2014	2015	2016	2017	2018	2019	2020	Average growth rate, 2015-2020
Bulgaria	4,5	7	7	15,1	28	29,21	30	30	33,27	21%
Czech Republic	68	59	74	78,5	93,6	126,5	164	204,4	204,4	22%
Hungary	20	25	30	30	30	30	30	30	30	0%
Poland	50	100	120	167	167	235	250	314,1	314,1	15%
Romania	10	8,37	24,8	24,8	40,7	40,65	40,7	40,65	40,65	13%
Ukraine	0,6	2,4	14,5	17,5	21,2	29,4	33	36	38	17%

Source: Research Institute of Organic Agriculture FiBL (2022b).

The Czech market is the most developed in terms of international trade. In 2008 the Czech organic exports amounted to € 6 million; in 2015 - € 53.36 million; in 2020 - € 116.6 million. In 2008 the Czech organic imports amounted to € 32 million; in 2015 - € 35 million; in 2020 - € 115.7 million. The cumulative growth rate of exports to the Czech Republic was 377% from 2008-to 2020, with imports - at 166%. In Hungary, there is almost no transformation and growth in the market: from 2008-to 2020, the volume of exports and imports remained at a level of € 20 million and € 18 million, respectively. There are no positive changes in the organic market of Romania: the volume of exports remained at € 200 million from 2012-to 2020: the number of imports was at € 35 million. Ukraine's organic exports have been growing significantly since 2013: in 2013, exports amounted to € 36 million, in 2015 - € 50 million, in 2020 - € 178.6 million, and the cumulative growth rate for 2013 - 2020 is 285%. At the same time, Ukraine's imports have remained at a low level of € 4 million in the last 2015-2020 years.

It should also be noted a very low share of organic retail sales in all EE countries: in Bulgaria, the figure was 0.44% in 2020, in the Czech Republic - 1.5%, in Hungary - 0.3%, Poland - 0.62%, in Romania - 0.15% in 2020 (Research Institute of Organic Agriculture FiBL, 2022c).

With the growth of markets in Bulgaria, Poland, and Ukraine in the period after the crisis economic growth, there is an increase in consumption with differences depending on the level of socioeconomic development of the country. In Bulgaria, per capita consumption increased in 2010 after the 2008-2009 crisis, continuing to rise to €11.66 per capita by 2014. While after the economic recession of 2014, organic per capita consumption decreased significantly to €2.09 per capita, gradually increasing to €5 per capita in 2020. The reasons for economic recessions have different effects on food consumption patterns in different countries. In the Czech Republic, organic per capita consumption increased gradually from 2010-to 2020 to €19.1 per person in 2020 (Table 7). In Hungary, organic per capita consumption remained stable from 2010-to 2020. Poland also experienced a gradual increase in organic per capita consumption: €6.35 per capita from 2015-to 2020. Romania and Ukraine have the lowest organic per capita consumption: €2.06 per capita and €0.9 per capita, respectively, with a stable slight increase.

Table 7. Organic per capita consumption, euro per person, 2008-2020

Organic per capita consumption	2008	2010	2014	2015	2016	2017	2018	2019	2020	Average, 2015-2020
Bulgaria	0,59	0,94	11,66	2,09	3,91	4,11	4,11	4,25	5	3,91
Czech Republic	6,57	5,63	7,03	7,44	9,15	11,92	16,2	19,1	19,1	13,82

Hungary	1,99	2,49	3,03	3,04	3,04	3,04	3,04	3,04	3,04	3,04
Poland	1,31	2,62	3,15	4,39	4,39	6,15	6,59	8,28	8,28	6,35
Romania	0,48	0,41	1,25	1,25	2,06	2,06	2,06	2,06	2,06	1,93
Ukraine	0,01	0,05	0,32	0,41	0,5	0,69	0,74	0,81	0,9	0,68

Source: Research Institute of Organic Agriculture FiBL (2022c).

Thus, the most developed is the market of organic products in the Czech Republic, both at the expense of domestic consumption and at the expense of export orientation of the country. Meanwhile, the markets of Bulgaria and Poland have been growing steadily over the last 2010-2020 years on the back of domestic consumption. The market in Ukraine was characterized by stagnation. The markets of Romania and Ukraine are the least developed but are characterized by growth in 2014-2020.

The impact of Russian aggression on the EE organic markets

The refugee flows to the EU since the beginning of Russian aggression in 2022, more than 4 million people as of March 30, will lead to an increase in demand for basic products (more than 2 million in Poland, 116,000 in Hungary, 67,000 in Slovakia, 45,000 in Romania and 79,000 in Moldova as of March 03, 2022).

The above-mentioned organic market trends allow us to shape the potential transformation of markets after the events of 2022:

1. Possible market growth of organic products in countries with a high influx of refugees (Poland, Romania, Bulgaria, Moldova) and in Ukraine to solve the problem of the food crisis, in particular, due to small farms that will meet the demand for agricultural products of organic origin. Because of the damage to strategic civil infrastructure, which includes large agro-industrial producers in Ukraine, it is possible to stimulate the production of small farmers and households.

2. Significant increase in prices of organic products due to increased demand for food and the food crisis.

3. The growth of markets in Poland and the Czech Republic as the most developed among the EE countries due to increased demand for products in the importing countries (Germany, Italy, France, and Spain) also receiving internally displaced persons and refugees.

4. Possible decrease in the production of organic products due to the reduction of demand due to the growth of consumption of essential goods. It will lead to a decrease in retail sales, exports, and imports of organic products.

5. Through the active provision of financial assistance to Ukraine to meet food and humanitarian needs, EE countries reduce the financial capacity to support organic producers and the level of their subsidies.

5 Discussion

This research confirms some trends and characteristics of the market for organic products in the EE countries, which were observed during the years 2000-2010 (Jansen & Schaer, 2012; Gauvrit & Schaer, 2013). Consequently, the markets of Poland and the Czech Republic are the largest in terms of retail sales and organic consumption per person. In second place in these development indicators are the markets of Bulgaria and Romania. The Czech market is the most developed both in terms of internal dynamics and the volume of exports due to the developed national legal framework of institutional regulation and financial support to producers. This study confirms the conclusions of Jansen & Schaer (2012) about the differences in market dynamics. In addition, different specialization depending on the type of organic products is identified, which will determine the changes in markets after the events of 2022. Consequently, Bulgaria, the Czech Republic, Hungary, Poland, and Romania specialize mainly in organic cereals production, so we can expect the growth of this niche as a priority, which provides consumers with essential goods.

As in the works by Jansen & Schaer (2012), Gauvrit & Schaer (2013), the study revealed a continuation of the trends of 2000-2010 in the period 2010-2020, namely: the Czech market is most developed; Poland shows the maximum growth rate, including domestic production; markets of Ukraine, Bulgaria, and Romania - the giant markets, which began to rapidly develop local markets of organics, and which can be seen growth at a lower rate; Hungary is growing the smallest rate. It was also found that for the period 2012-2020, there is a tendency to intensify the processes of local organic markets development, in particular, export-oriented (Jansen & Schaer, 2012; Gauvrit & Schaer, 2013).

6 Conclusions

This research reveals several new trends in the organic products markets of the EE region. First, it identified the growth of organic market operators in Bulgaria, the Czech Republic, Hungary, and Ukraine from 2012-to 2020 and their reduction in Poland and Romania. Secondly, the differentiation of countries in terms of organic crop area, which in general grew over 2012-2020 (in Bulgaria - by 23%, in the Czech Republic - by 2%, in Hungary - by 12%, in Poland - reduced by 3%, in Romania - by 7%, in Ukraine - by 9%). Third, despite an increase in the amount of land under organic production, the share of land in the total land bank remains low, except in the Czech Republic, where the index is 14.74% in 2015-2020. Fourth, most of the producers of the EE countries specialize in the production of cereals, wheat and spelt, oats, and a mixture of spring cereals, green plants, and fresh vegetables. Fifth, organic markets have grown significantly in some EE countries, while in others, the growth rate was stable: 1) in 2010 after the 2008-2009 crisis (Bulgaria, Poland, Ukraine), and the growth rate after 2010 was maintained until 2014 inclusive and the economic recession in 2014; 2) in 2015 after the economic slowdown in 2013-2014 (Bulgaria, Czech Republic, Poland, Ukraine) and maintaining this growth rate until 2020; 3) stable market growth in Bulgaria, Czech Republic, Poland, Romania, Ukraine in 2015-2020. The Czech market is the most developed in terms of international trade. In Hungary, there is almost no transformation and growth in the market. There are no positive configurations of the organic market in Romania. In Ukraine, the export of organic products is growing significantly. There was identified a very low share of organic retail sales in all EE countries. With the growth of the markets of Bulgaria, Poland, and Ukraine, during the period after the crisis economic growth, there is an increase in consumption with differences depending on the level of socio-economic development of the country.

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