Proceedings of the 2024 International Conference "ECONOMIC SCIENCE FOR RURAL DEVELOPMENT" No 58
Jelgava, LBTU ESAF, 16-17 May 2024, pp. 381-390
DOI: 10.22616/ESRD.2024.58.037

TRENDS IN AGRICULTURAL LAND PRICES IN POLAND AND IN THE EUROPEAN UNION

Alina Danilowska[1], associate professor PhD hab.

[1] Warsaw University of Life Sciences-SGGW, Department of Economics and Economic Policy, Poland

Abstract. The article aims to identify the agricultural land price trends in Poland and the European Union (EU) from 2013 to 2022. The study encompasses EU member countries for which data on arable land prices and permanent grassland prices for 2013-2022 are available. The analysis showed that prices of arable land and permanent grassland increased noticeably during the ten years in most countries. In Poland, they doubled. The countries that recorded a decline belonged to old EU members. Arable land prices were higher than grassland prices. In several countries, the differences were significant. Over the ten years, the price advantage for arable land on permanent grassland increased in most countries surveyed. The annual growth rates fluctuated noticeably. The spectacular high changes occurred mainly in post-socialistic countries due to changes in law. Price growth in the old Member States was generally lower than in post-socialist countries. The spread of agricultural land prices between countries has declined. These phenomena prove the slow process of convergence of agricultural land prices. The COVID-19 pandemic has affected agricultural land prices. It shifted the prices up.

Key words: arable land price, permanent grassland price, trends in agriculture land prices, COVID-19 pandemic.
JEL code: Q15, R14, R24

Introduction

The role of the agricultural land in agriculture production is crucial. However, the demand for agricultural land stems not only from the role of land in agricultural production. Land price formation is, therefore, essential for agriculture and other areas of economic activity for which the spatial aspect is important.

The market price of agricultural land is a result of several factors. These can be divided into four groups: one related to land supply and three determining land demand.

The first group comprises factors arising from the physical characteristics of the land resource. These can be categorized as supply-side factors. The land resource is strictly limited and non-producible. The land occupies a finite area, and nobody can produce an additional area. Where wasteland exists due to various factors, attempts can be made to give it the characteristic of usefulness. As examples of such efforts, we can indicate the Chinese government's program of land recuperation (Zhang et al., 2021), post-mining disturbed land reclaiming (Ignatyeva et al., 2020; Pietrzykowski & Krzaklewski, 2018; Kirilov & Banov, 2016) and adaptation of abandoned agricultural land (Smaliychuk, 2016). The highly controversial activity for an increase of agricultural land area is a large-scale rainforest conversion, which is taking place in Brazil and Indonesia (Berkelmann et al., 2018; Ramos et al., 2022; Kusuma et al., 2018).

The second group includes factors resulting from the role of land as an agricultural production factor. In agricultural production, the role of land is crucial. The demand for land is derived from the demand for farm products in the market. Growing world populations, rising per capita incomes allowing for increased levels of consumption, and changing consumption patterns towards consuming more livestock products are increasing the demand for agricultural products and, thus, the demand for agricultural land (Tweeten & Thompson, 2009).

The third group contains factors following alternative uses of agricultural land. Remeikiene et al. (2019) point out that the demand for land is of a derivate nature. It is derived from different land uses. Land as an area is necessary for housing, infrastructure, recreation, and other productive activities such as photovoltaics. As Wu et al. (2022) noted, economic growth and urban expansion in China since 1978 have led to the loss of significant amounts of farmland. According to Kocur-Bera & Pszenny (2020), converting

[1] E-mail: alina_danilowska@sggw.edu.pl

agricultural land into built-up areas is inevitable with population growth. Boere (2015) indicates that in the Netherlands agricultural land located near cities faces pressure from housing and infrastructure which entail larger land prices. Goldberg (2023) analysed the consequences of solar energy development on agricultural land from different perspectives, including a 'trade-off' perspective. Farja & Maciejczak (2021) conclude that replacing marginally productive agricultural land with solar fields benefits landowners and society.

The fourth group includes factors stemming from the perception of land as an investment good bought and held for speculative purposes like many other physical or financial assets. It's crucial to note that the great financial crisis in 2008-2009 had a profound impact on the land market, with a significant increase in pressure from financial institutions. This led to what many refer to as "land hunting." Various financial institutions have since shown interest in land as an asset of 'growing scarcity' or of 'safe' assets (Anseeuw et al., 2012; Oliveira et al., 2021; Knuth, 2015). Franc-Dabrowska (2022) points to the process of financialization of agriculture through the purchase of farming land and the subsequent impact on the increase in land prices. Various aspects of agricultural land speculation are studied by Roche & McQuinn (2000), Kan & Chen (2021), Oyedeji (2022), and Gemeda et al. (2019), among others.

The factors above are the source of demand for land at a given place and time. It's important to understand that demand is not a static concept but depends on the type of these factors and their concurrent occurrence (accumulation). When there is a reasonably limited land supply, these demand pressures can significantly affect the level and rate of price change in the land market.

The article aims to identify the agricultural land price trends in Poland and the European Union from 2013 to 2022. Moreover, the author has given particular attention to the reaction of farmland prices to the unprecedented COVID-19 pandemic in 2020 and 2022, which has significantly impacted various sectors of economy, including agriculture.

Material and methods

The study encompasses European Union (EU) member countries for which data on arable land prices and permanent grassland prices for 2013-2022 are available (10 years). Moreover, the study also encompasses Croatia and Italy, for which data are available for eight consecutive years: for Croatia, the years are 2015-2022, and for Italy, 2013-2020. Due to the size of the country and the resulting specificity of property price development, we decided to exclude Luxembourg from the analysis. Finally, arable land prices were analysed in 20 countries, while permanent grassland prices were in 19 (due to the lack of data for Finland). It should be noted that the EU countries vary considerably in terms of total area and agricultural area. The level of development, the agricultural model, and the area structure of agriculture are also different. The place of agriculture in each country's economy and external environment is also different.

The analysis used the comparative method in terms of time and countries. Moreover, the descriptive statistical method was applied. We used the gap (the difference between a characteristic's maximum and minimum value) to assess the land price variation between countries. We also applied the arithmetic mean and the rate of growth.

Research results and discussion

Variation in land prices

Data analysis shows several characteristic phenomena in the price formation of this essential agricultural production factor: land (Tables 1 and 2).

A phenomenon worth highlighting is the considerable variation in arable land prices between the countries in the EU. The Netherlands, Italy, and Ireland had the highest prices per ha of arable land. The very high prices stem partly from high land productivity. Notably, the countries' order was constant in all years under study. At the opposite pole in 2013 were the three countries: Romania, Estonia, and Lithuania. Nine years later, these three countries were outside this group. In 2022, it was formed by Croatia (lowest prices), Latvia, and Slovakia.

Remarkably, the group of ten countries with the lowest prices included mainly post-socialist countries. In 2013, 9 post-socialist countries and France were in it, and in 2022, 8 such countries plus France and Finland. According to Lovrincevic & Vizek (2009), the reason for lower agricultural land prices in post-socialist countries than in other countries (old EU members) is the lower level of economic development of these countries and the higher share of agriculture in the economy of these countries. In 2013, Poland was in 10th place among the surveyed countries in terms of arable land prices, while in 2022, it moved to 13th place.

Table 1

Arable land prices by countries in 2013-2022 (Euro per hectare)

Country	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Bulgaria	3 175	3 620	3 891	4 131	4 622	5 011	5 382	5 281	6 001	7 303
Czechia	3 662	4 282	4 775	5 463	6 448	7 600	8 561	9 477	10 593	12 885
Denmark	15 708	17 209	18 752	17 584	17 328	17 724	17 580	17 491	18 213	19 841
Estonia	1 865	2 426	2 567	2 735	2 890	3 174	3 461	3 772	4 383	5 730
Ireland	26 366	23 449	23 594	18 141	19 903	27 457	28 068	25 724	37 584	38 013
Greece	13 907	13 276	12 633	12 272	12 264	12 387	12 604	12 599	13 048	13 571
Spain	11 910	12 192	12 574	12 522	12 827	13 023	12 926	12 901	12 938	10 263
France	5 770	5 940	6 000	6 070	6 030	6 020	6 000	6 080	5 940	6 130
Croatia	x	x	2 726	2 835	3 005	3 282	3 395	3 440	3 661	3 700
Italy	32 532	39 247	40 153	33 193	31 731	30 569	36 307	35 447	x	x
Latvia	4 980	2 552	2 654	2 917	2 975	3 856	3 922	4 182	4 331	4 420
Lithuania	2 009	2 330	3 089	3 516	3 571	3 890	3 959	4 127	4 667	5 012
Hungary	2 709	3 042	3 356	4 182	4 368	4 662	4 862	4 893	5 215	5 240
Netherlands	53 888	56 583	61 227	63 605	66 614	71 803	71 792	72 702	77 583	85 431
Poland	6 275	7 723	9 220	9 083	9 699	10 414	10 991	10 711	10 937	12 673
Romania	1 653	2 423	2 039	1 958	2 085	4 914	5 339	7 163	7 601	8 051
Slovenia	15 545	16 009	16 071	17 136	16 876	18 460	18 752	21 451	22 312	23 282
Slovakia	5 575	11 442	24 175	28 217	3 009	3 432	3 789	3 984	3 977	4 790
Finland	8 461	8 090	8 138	8 326	8 718	8 380	8 686	8 524	9 009	9 099
Sweden	6 797	7 408	7 751	7 921	8 708	8 842	9 056	10 100	12 004	12 277

Source: Eurostat (2024)

The spreads between the maximum and minimum price each year were huge. In 2013, the highest price spread occurred between Romania and the Netherlands, and it was as high as 1 to 32. By 2019, the price spread was gradually narrowing; in 2019, it was as high as 1 to 21 (Romania and the Netherlands remained the outermost countries). In the following two years, the maximum spread remained at the same level, while in 2022, it increased and was as high as 1 to 23 (the Netherlands and Croatia). Such a large spread within the European Union shows that levelling out the price differences of such a specific good as

agricultural land is a slow process. The results of this study for agricultural land align with the results of Twardowska (2019) conducted for the period 2006-2016.

Prices for permanent grassland were lower than for arable land (Table 2). The differences were significant. In 2013 in Bulgaria, arable land prices were almost four times higher than permanent grassland prices, and this relationship was maintained throughout the period under study. A similar phenomenon occurred in Sweden, Greece, and Spain, where the relationship was as high as 3:1. In the other countries, the differences were lower - reaching several tens of percent. Over the ten years, the prevalence of agricultural land prices increased in most countries studied; only in five countries did it decrease, and in two countries prices remained at the same level. In Poland, arable land prices in 2013 were higher than permanent grassland prices by 47 percent, and the difference increased to 60 percent during the period studied. Such trends indicate slow changes in the agricultural production structure and production technology.

Throughout the period under study, the lowest prices for permanent grassland were recorded in Bulgaria and the highest in the Netherlands. The spreads between the countries between with the maximum and minimum price each year were huge and higher than the spread of arable land prices. In 2013, permanent grassland prices in the Netherlands were 46 times higher than in Bulgaria; in 2018, the difference between the two increased to level 51 times, but in the following years, it decreased, and in 2022, it was 36 times. The changes in relations indicate a slow process of equalizing grassland prices between EU members as well. However, it is difficult to forecast when this process will lead to a closing of the gap.

Table 2

The permanent grassland prices by countries in 2013-2022 (Euro per hectare)

Country	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Bulgaria	1 012	1 258	1 161	1 401	1 253	1 115	1 536	1 351	1 643	1 887
Czechia	2 395	3 498	3 495	4 636	4 112	6 333	7 081	7 771	9 631	11 452
Denmark	7 931	8 689	9 468	8 878	8 749	8 949	8 876	8 890	8 911	10 018
Estonia	1 616	2 006	2 013	2 181	2 179	2 398	2 856	3 087	3 358	4 259
Ireland	15 697	15 221	13 992	14 103	14 661	13 823	15 558	15 703	18 084	19 215
Greece	5 073	4 666	4 674	4 612	4 395	4 341	4 333	4 323	4 332	4 538
Spain	4 644	4 516	4 684	4 469	4 456	4 439	4 546	4 432	4 524	4 416
France	5 770	5 940	6 000	6 070	6 030	6 020	6 000	6 080	5 940	6 130
Croatia	:	:	1 637	1 510	1 651	1 751	1 848	2 160	2 422	2 786
Italy	21 626	23 351	24 785	18 313	15 567	14 986	17 134	15 896	:	:
Latvia	2 140	1 371	1 526	1 635	1 663	2 117	2 163	2 255	2 752	3 007
Lithuania	1 182	1 373	2 151	2 456	2 170	2 352	2 533	2 840	3 497	3 585
Hungary	1 227	1 426	1 572	1 693	1 871	2 111	2 304	2 384	2 681	2 850
Netherlands	46 626	48 406	50 860	53 574	55 630	57 140	56 636	59 147	62 818	67 857
Poland	4 252	5 280	5 878	5 794	6 032	6 508	6 730	6 871	7 051	7 918
Romania	1 263	1 744	1 897	1 836	1 983	3 424	3 301	5 154	5 354	5 671
Slovenia	14 971	14 332	15 486	15 427	17 012	16 946	18 015	19 500	18 992	20 354
Slovakia	3 967	6 383	16 525	13 808	2 206	2 190	2 107	2 501	2 425	3 369
Sweden	2 381	2 814	2 897	2 957	3 342	3 441	3 230	3 825	4 465	4 469

Source: Eurostat (2024)

As for arable land prices, permanent grassland prices were the lowest in post-socialist countries. In 2013, the top 10 countries with the lowest prices included nine post-socialist countries and one old

EU member - Sweden. In the following years, the number of post-socialist countries decreased in this group, and Greece and Spain replaced Czechia and Poland.

Price dynamics

A critical issue is the dynamics of arable land and permanent grassland prices in individual countries. An analysis of the data in Table 3 shows that an increase in prices was more common than a decrease in prices. In as many as seven countries: Czechia, Estonia, Croatia, Lithuania, Hungary, the Netherlands, and Sweden, arable land prices increased in all the years of the analysed period. In several countries with well-developed agriculture, price decreases were recorded in 4 out of 9 years studied. These were Denmark, France, Italy, and Spain. However, only in Spain, where the phenomenon of abandonment of rural agricultural areas occurred for decades (Degado-Artes et al., 2022), the arable land prices in 2022 were lower than in 2013.

Table 3

The rate of arable land price growth (year to year) (%)

Country	2014	2015	2016	2017	2018	2019	2020	2021	2022
Bulgaria	14.0	7.5	6.2	11.9	8.4	7.4	-1.9	13.6	21.7
Czechia	16.9	11.5	14.4	18.0	17.9	12.6	10.7	11.8	21.6
Denmark	9.6	9.0	-6.2	-1.5	2.3	-0.8	-0.5	4.1	8.9
Estonia	30.1	5.8	6.5	5.7	9.8	9.0	9.0	16.2	30.7
Ireland	-11.1	0.6	-23.1	9.7	38.0	2.2	-8.4	46.1	1.1
Greece	-4.5	-4.8	-2.9	-0.1	1.0	1.8	0.0	3.6	4.0
Spain	2.4	3.1	-0.4	2.4	1.5	-0.7	-0.2	0.3	-20.7
France	2.9	1.0	1.2	-0.7	-0.2	-0.3	1.3	-2.3	3.2
Croatia	-	-	4.0	6.0	9.2	3.4	1.3	6.4	1.1
Italy	20.6	2.3	-17.3	-4.4	-3.7	18.8	-2.4	-	-
Latvia	-48.8	4.0	9.9	2.0	29.6	1.7	6.6	3.6	2.1
Lithuania	16.0	32.6	13.8	1.6	8.9	1.8	4.2	13.1	7.4
Hungary	12.3	10.3	24.6	4.4	6.7	4.3	0.6	6.6	0.5
Netherlands	5.0	8.2	3.9	4.7	7.8	0.0	1.3	6.7	10.1
Poland	23.1	19.4	-1.5	6.8	7.4	5.5	-2.5	2.1	15.9
Romania	46.6	-15.8	-4.0	6.5	135.7	8.6	34.2	6.1	5.9
Slovenia	3.0	0.4	6.6	-1.5	9.4	1.6	14.4	4.0	4.3
Slovakia	105.2	111.3	16.7	-89.3	14.1	10.4	5.1	-0.2	20.4
Finland	-4.4	0.6	2.3	4.7	-3.9	3.7	-1.9	5.7	1.0
Sweden	9.0	4.6	2.2	9.9	1.5	2.4	11.5	18.9	2.3

Source: Eurostat (2024)

The most considerable fluctuations in arable land prices occurred in Romania, Slovakia, and Ireland. The year-on-year price growth rate in Romania ranged from -16% in 2015 to 135% in 2018. The phenomenon stems from complex reasons. Stioca & Dumitru (2021) see the reasons for the increase in land prices in Romania as the rise in the attractiveness of agricultural activity thanks to the support of agriculture by the European Union and the related process of concentrating land in larger farms. Moreover, housing demand for land near major urban centres and the demand from foreign investors are land price drivers. In Slovakia, a sudden and substantial increase in the price of agricultural land occurred in 2014

and 2015 due to the end of the ten-year moratorium on land purchases by foreigners (Drabik & Rajcaniova, 2014).

In addition to differences in growth rates from year to year, growth rates varied between countries from year to year. For example, in 2014, arable land prices in Latvia dropped by 48%, while in Slovakia they increased by 105%. As a result of these various processes, arable land prices in 2022 were higher than in 2013 in 17 of the 20 countries surveyed. Only in Greece, Latvia, and Slovakia did prices drop. In the last two countries, the decline was significant. In Poland, arable land prices increased at a double-digit rate in 2013, 2014 and 2022. In the remaining years, the increase was single-digit, and prices in 2015 decreased slightly. Finally, during the analysed period, the agricultural land prices in Poland doubled.

Table 4.

The rate of permanent grassland price growth (year to year) (%)

Country	2014	2015	2016	2017	2018	2019	2020	2021	2022
Bulgaria	24.3	-7.7	20.7	-10.6	-11.0	37.8	-12.0	21.6	14.9
Czechia	46.1	-0.1	32.6	-11.3	54.0	11.8	9.7	23.9	18.9
Denmark	9.6	9.0	-6.2	-1.5	2.3	-0.8	0.2	0.2	12.4
Estonia	24.1	0.3	8.3	-0.1	10.1	19.1	8.1	8.8	26.8
Ireland	-3.0	-8.1	0.8	4.0	-5.7	12.6	0.9	15.2	6.3
Greece	-8.0	0.2	-1.3	-4.7	-1.2	-0.2	-0.2	0.2	4.8
Spain	-2.8	3.7	-4.6	-0.3	-0.4	2.4	-2.5	2.1	-2.4
France	2.9	1.0	1.2	-0.7	-0.2	-0.3	1.3	-2.3	3.2
Croatia	-	-	-7.8	9.3	6.1	5.5	16.9	12.1	15.0
Italy	8.0	6.1	-26.1	-15.0	-3.7	14.3	-7.2	-	-
Latvia	-35.9	11.3	7.1	1.7	27.3	2.2	4.3	22.0	9.3
Lithuania	16.2	56.7	14.2	-11.6	8.4	7.7	12.1	23.1	2.5
Hungary	16.2	10.2	7.7	10.5	12.8	9.1	3.5	12.5	6.3
Netherlands	3.8	5.1	5.3	3.8	2.7	-0.9	4.4	6.2	8.0
Poland	24.2	11.3	-1.4	4.1	7.9	3.4	2.1	2.6	12.3
Romania	38.1	8.8	-3.2	8.0	72.7	-3.6	56.1	3.9	5.9
Slovenia	-4.3	8.1	-0.4	10.3	-0.4	6.3	8.2	-2.6	7.2
Slovakia	60.9	158.9	-16.4	-84.0	-0.7	-3.8	18.7	-3.0	38.9
Sweden	18.2	2.9	2.1	13.0	3.0	-6.1	18.4	16.7	0.1

Source: Eurostat (2024)

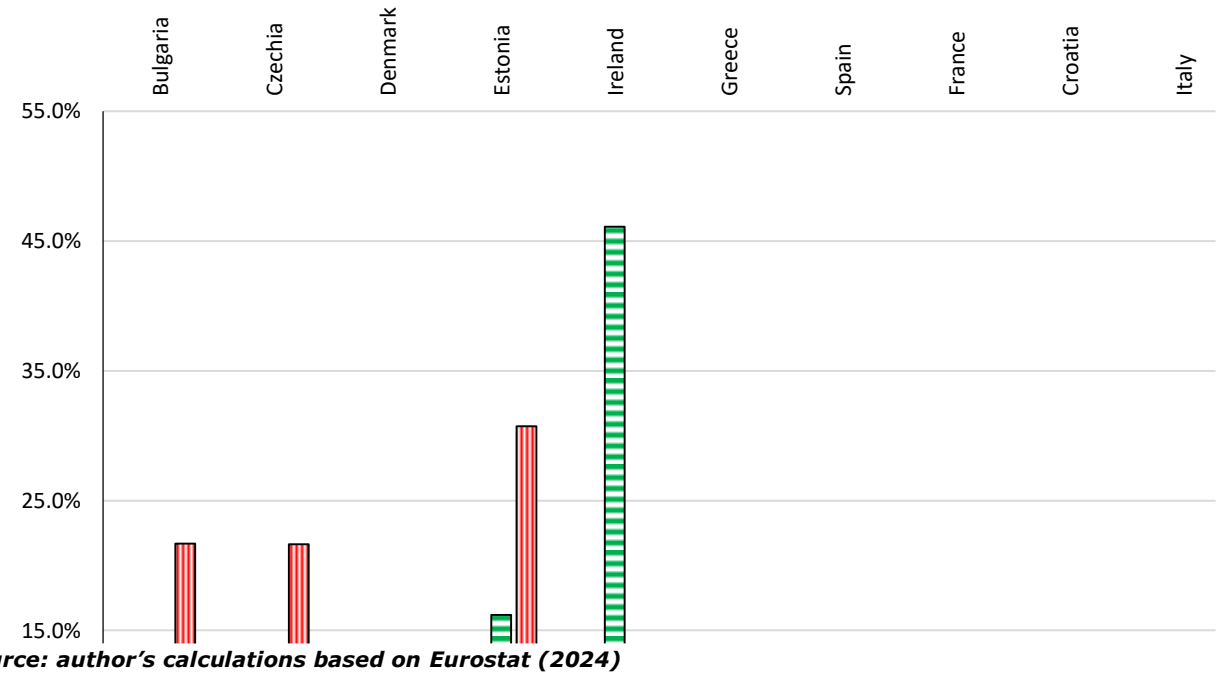
Prices of permanent grassland changed in various directions. The dynamics of changes varied between years and countries. The highest increase occurred in 2015 in Slovakia, and the most profound decline in 2014 in Latvia. In all the years examined except 2017, the number of countries where prices increased was higher than those where prices decreased. In Spain, France, Italy, and Denmark, like arable land prices, grassland prices fell in 4 out of 9 years examined. As a result of this multi-directional and different pace of changes, in 2022, the prices of permanent grassland were higher than in 2013 in the 15 countries surveyed. The changes in Czechia, Romania, and Lithuania were substantial: 4.8, 4.5, and 3.0 times, respectively. Of the four countries that experienced a price decline during the period under review, the most significant decrease of 27% was in Italy.

A characteristic phenomenon was a slower growth rate of prices of permanent grassland than of arable land. However, for each country, it is possible to indicate years when the opposite was true (the prices of grassland increased faster than those of arable land). In Poland, prices of both types of agricultural land

changed at a similar pace. Only in 2015 was the growth rate of grassland prices higher than that of arable land prices by eight percentage points.

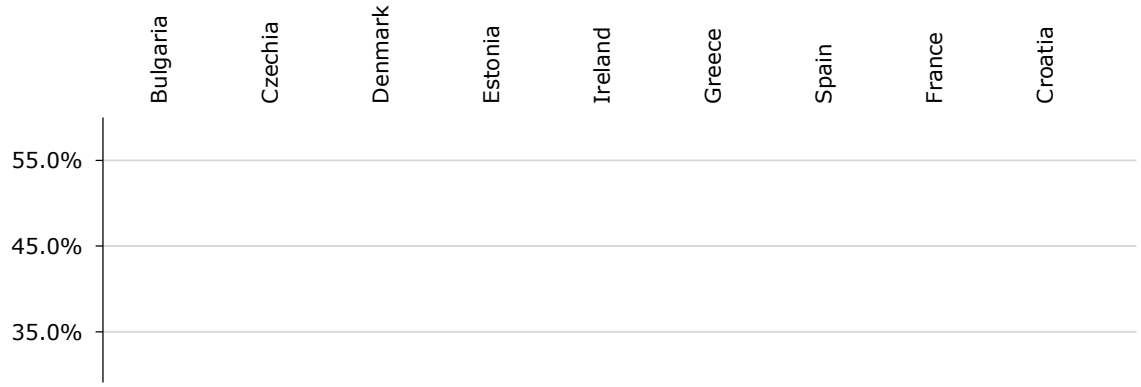
The impact of the COVID-19 pandemic on land prices

The analysis of price dynamics data for three years of the pandemic shows that in the first year of pandemic, the land market reacted ambiguously. There was a decline in arable land prices in eight countries, but only in Ireland was it quite significant (Figure 1). In seven of the remaining 12 countries surveyed, prices increased by more than 5%. Permanent grassland prices fell in only four countries: Bulgaria, Greece, Spain and Italy (Figure 2). These were countries where arable land prices also dropped. In other countries, the prices of permanent grassland increased, and in eight of them, the increases were significant. A clear upward trend in arable land prices and permanent grassland became visible in the second year of the pandemic. Only in two countries, France and Slovakia, did the prices of arable land decrease, and only in three, France, Slovakia, and Slovenia, did the prices of grassland decrease however, relatively slightly. The average price increase for arable land was 10.2%, and for grassland 11.4%. In the last year of the pandemic, the prices of both types of agricultural land decreased only in Spain, while they increased in other countries. The price increases for both arable land and grassland were significant, as in 2021. The average price increase for arable land was 9.5%, and for grassland - 11.3%. In Poland, these increases were higher than average: 15.9% for agricultural land and 12.3% for permanent grassland.



Source: author's calculations based on Eurostat (2024)

Fig. 1. **The rate of arable land price growth during pandemic COVID-19 (year to year)**



Source: author's calculations based on Eurostat (2024)

Fig. 2. **The rate of permanent grassland price growth during pandemic COVID-19 (year to year)**

There are several channels for the impact of the pandemic on land prices. The Society of Chartered Surveyors Ireland cites restrictions due to COVID-19 as the reason for the decline in the number of transactions in Ireland and, therefore, prices in 2020; while the increase in prices in the following years is attributed to the rise in the profitability of agricultural production (SCSI, 2023). In France, the number of land purchases by non-farmers increased rapidly in 2021, and the trend continued in 2022 (Charlotte, 2023). Ramachandran & Vidya (2021), Whitaker (2021), and DeWaard (2021) indicate the pressure of demand for land in rural areas caused by urban-rural migration during the pandemic. Lee et al. (2022) believe that macroeconomic conditions related to COVID-19 influenced land prices and, additionally, the state's increased financial support for farmers. Masniak and Danilowska (2022) point to one of such macroeconomic factors, namely inflation. Which of these factors and to what extent contributed to changes in agricultural land prices in the individual countries studied requires further research.

Conclusions

1) The analysis showed that agricultural land prices (both arable land and permanent grassland) increased noticeably during the ten examined years in most countries. The group of countries that recorded a decline in arable land prices included countries belonging to the old EU members. These were Italy, Greece, and Spain. There was also an absolute decline in grassland prices in Spain and Greece. France was a country where agricultural land prices increased by only a few percent over ten years. Among the post-socialist countries, the prices of both types of agricultural land decreased only in Slovakia. In other post-socialist countries, significant price increases were recorded. The spread of agricultural land (arable and permanent grassland) prices between countries has declined. These phenomena prove the slow process of convergence of agricultural land prices.

2) Arable land prices were higher than grassland prices. The differences were significant - in several countries, they were several times higher, and in these countries, they remained throughout the period under study. Over the ten years, the price advantage for arable land increased in most of the countries surveyed. Poland is one of these countries.

3) The price annual growth rates fluctuated noticeably. The spectacular high changes occurred mainly in post-socialistic countries due to changes in law. Price growth in the EU old member states was generally lower than in post-socialist countries.

4) The effect of the Covid-19 pandemic on agricultural land prices in the EU is ambiguous. However, the analysis showed that compared to the pre-pandemic period, there has been a sharp decline in the number of countries where land prices have fallen. It can be a sign of the economic repercussions of the pandemic. In Poland, the increase in arable land and permanent grassland prices, which was relatively low in 2021 and significant in 2022, may be related to the pandemic.

Bibliography

1. Anseeuw, W.,Wily, L. A., Cotula, L.,& Taylor, M. (2012). Land rights and the rush for land: findings of the global commercial pressures on land research project. Rome: ILC, 72 p. ISBN 978-92-95093-75-1. Retrieved from: https://www.landcoalition.org/en/resources/Land_Rights_and_the_Rush_for_Land/ Access: 12.03.2024
2. Berkelmann, D., Schneider, D., Engelhaupt, M., Heinemann, M., Christel, S., Wijayanti, M., Meryandini, A., & Daniel, R. (2018). How rainforest conversion to agricultural systems in Sumatra (Indonesia) affects active soil bacterial communities. Frontiers in Microbiology, 9, 2381.
3. Boere, E. (2015). Economic analysis of Dutch agricultural land use in a changing policy environment. Thesis submitted in fulfilment of the requirements for the degree of doctor at Wageningen University, Retrieved from: https://edepot.wur.nl/347867 Access 20.04.2024.
4. Charlotin, B. (2023). Land prices in France in 2022. Retrieved from: https://www.ma-propriete.fr/en/blog/le-prix-des-terres-en-france-en-2022, Access: 10.03.2024.
5. Delgado-Artés, R., Garófano-Gómez, V., Oliver-Villanueva, J.-V.,& Rojas-Briales, E. (2022). Land use/cover change analysis in the Mediterranean region: a regional case study of forest evolution in Castelló (Spain) over 50 years. Land Use Policy, 114: 105967.
6. Drabik, D.,& Rajcaniova, M. (2014). Agricultural land market in Slovakia under the new land acquisition law. Review of Agricultural and Applied Economics, XVII (2): 84-87
7. Eurostat (2024). Retrived from: https://ec.europa.eu/eurostat Access: 1-5.03.2024.
8. Farja, Y., & Maciejczak, M. (2021). Economic implications of agricultural land conversion to solar power production. Energies, 14(19), 6063.
9. Franc-Dąbrowska, J. (2018). Financialization of agriculture through purchase of farming land Proceedings of the 2018 International Conference "Economic Science For Rural Development", 49, 102-110.
10. Gemeda, B.S., Abebe, B.G., Paczoski, A., Xie, Y., & Cirella, G.T. (2019). What motivates speculators to speculate? Entropy (Basel), 22(1), 59.
11. Goldberg, Z. A. (2023). Solar energy development on farmland: Three prevalent perspectives of conflict, synergy and compromise in the United States. Energy Research & Social Science, 101, 103145.
12. Ignatyeva, M., Yurak, V., & Pustokhina, N. (2020). Recultivation of post-mining disturbed land: Review of content and comparative law and feasibility study. Resources, 9(6), 73.
13. Kan, K., Chen, Xi (2021). Land speculation by villagers: Territorialities of accumulation and exclusion in peri-urban China. Cities, 119, 103394.
14. Kirilov, I., & Banov, M. (2016). Reclamation of lands disturbed by mining activities in Bulgaria. Agricultural Science and Technology, 8(4), 339-345.
15. Kocur-Bera, K., & Pszenny, A. Conversion of agricultural land for urbanization purposes: A case study of the suburbs of the capital of Warmia and Mazury, Poland. Remote Sensing. 2020; 12(14), 2325.
16. Knuth, S.E. (2015). Global finance and the land grab: mapping twenty-first century strategies. Canadian Journal of Development Studies, 36(2), 163-178.
17. Kusuma, Y.W.C., Rembold, K, Tjitrosoedirdjo, S.S., & Kreft, H. (2018). Tropical rainforest conversion and land use intensification reduce understorey plant phylogenetic diversity. Journal of Applied Ecology; 55(5), 2216–2226.
18. Lee, B., Cheng, P-Y., Sun, L-Ch., Hsieh, Y-T., & Chang, H-H. (2022). Does COVID-19 Affect Farmland Prices? How and Why,. Agriculture, 12,2163, https//doi.org/10.3390/agriculture12122163
19. Lovrincevic, Z., & Vizek, M. (2009). Agricultural land in the new EU member states and Croatia: prices, affordabilities and convergence potential. Ekonomski Pregled (Economic Review), 60(01-02), 28-49.
20. Masniak, J., & Danilowska, A. (2022). Agricultural land prices in Poland during the Covid-19 Pandemic. Proceedings - of the 31st International Scientific Conference Agrarian Perspectives XXXI. Green Deal – Future Perspectives, XXXI, 138-148.
21. Oliveira, G.deL.T., McKay, B.M., & Liu, J. (2021). Beyond land grabs: new insights on land struggles and global agrarian change, lobalizations, 18(3), 321-338.
22. Oyedeji, J.O. (2022). Assessment of land speculator's operation for land accessibility in Nigeria, Baltic Journal of Real Estate Economics and Construction Management, 10, 26-40.
23. Pietrzykowski, M., & Krzaklewski, W. (2018). Reclamation of mine lands in Poland. In M.V. Prasad, P.J. de Campos Fa-vas, S.K. Mait (eds.) Bio-Geotechnologies for Mine Site Rehabilitation, Elseiver.
24. Ramachandran, V. (2021). Urban-rural mobility during COVID-19: the growth of 'cottagecore' in Australia and Aotearoa-New Zealand, MoLab Inventory of Mobilities and Socioeconomic Changes, Halle/Saale, Department 'Anthropology of Economic Experimentation', Max Planck Institute for Social Anthropology.

25. Ramos, D., Hartke, T.R., Buchori, D., Dupérré, N., Hidayat, P., Lia, M., Harms, D., Scheu, S., & Drescher, J. (2022). Rainforest conversion to rubber and oil palm reduces abundance, biomass and diversity of canopy spiders. PeerJ. 2022 Aug 16;10, :e13898.
26. Remeikienė, R., Gasparėnienė, L., & Ginevicius, R. (2019). The specificity of the investment in land as in real estate. International Journal of Strategic Property Management 23(4), 244-255.
27. Roche, M. J., & McQuinn, K. (2000). Speculation in agricultural land. Economics Department Working Paper Series n1010700, Department of Economics, National University of Ireland - Maynooth.
28. SCSI/TEAGASC. (2023). Annual Agricultural Land Market Review & Outlook 2023. Dublin.
29. Smaliychuk, A., Müller, D., Prishchepov, A.V., Levers, Ch., Kruhlov, I., & Kuemmerle, T. (2016). Recultivation of abandoned agricultural lands in Ukraine: Patterns and drivers. Global Environmental Change, 38, 70-81.
30. Stoica, D.G., & Dumitru, E. A. (2021). Aspects that contributed to changes in the price of agricultural land in Romania and other countries in the European Union. Scientific Papers Series Management, Economic Engineering in Agriculture and Rural Development, Vol. 21(4), 565-570.
31. Twardowska, A. (2019). Konwergencja typu sigma cen gruntów rolnych w państwach Unii Europejskiej. Scientific Journal of WULS Problems of World Agriculture, 19(1), 133–143.
32. Tweeten, L., & Thompson, S. (2009). Long-term global agricultural output supply-demand balance and real farm and food prices. Farm Policy Journal 6(1), 1-16.
33. Whitaker, S. (2021). Did the COVID-19 Pandemic Cause an Urban Exodus? Cleveland, Federal Reserve Bank of Cleveland.
34. Wu, X., Wang, Y., & Zhu, H. (2022). Does Economic Growth Lead to an Increase in Cultivated Land Pressure? Evidence from China. Land, 11(9), 1515.
35. Zhang, S., Xie, X., & Zhao, M. (2021). Asset specificity on the intention of farmers to continue Land recuperation: Based on the perspective of farmer differentiation. Land, 10(6), 603.