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AGRICULTURAL LAND USE IN ROMANIA AND LAND PRICES EVOLUTION

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Abstract. Romania is one of the European countries with the most favorable land fund and climatic conditions for agriculture. However, the agricultural sector faces problems related to land fragmentation, farmers' reluctance to join associations and the phenomenon of land grabbing by foreigners. In this context, the objective of this study is to highlight the dynamics of agricultural land use and their prices in Romania, especially at the regional level. The study was based on secondary statistical data provided by Eurostat and the National Institute of Statistics, as well as a literature review using a predefined set of keywords in the Web of Science (WOS) and other relevant scientific databases. The research conclusions show that Romania ranks fifth in terms of agricultural area, after countries such as France, Spain, Germany and Poland (Eurostat, 2022). According to data provided by Eurostat (2022), the price of agricultural land in Romania's development regions has increased in recent years (2014-2020). The lowest price of agricultural land is found in 2020 in the North-West development region (6.261 euros/ha) and the highest in the Bucharest-Ilfov development region (11615 euros/ha). Although the level of agricultural land prices depends on several factors, regional aspects (geographical position and proximity to large cities) as well as increased demand (including sales and purchase regulations) led to an increase in the attractiveness and thus the price of agricultural land in Romania during the analyzed period grew.

Keywords: Romania, agriculture, agricultural land, development region, the price of agricultural land

INTRODUCTION

Agriculture represents a multifunctional activity that primarily contributes to ensuring food security (Brunstad et al., 2005; Pocol, 2013). In addition to this primary role, it has multiple functions, such as: environmental protection function, economic and social function - by eradicating poverty, ensuring the well-being of the population and preserving cultural identity (Renting et al., 2009; Nowack et al., 2021). Practicing agriculture involves the use of natural, material and human resources. They become production factors when they are engaged in economic activities (Kurbatova et al., 2020). Thus, agricultural land represents the most valuable capital intended for food production, by cultivating plants and raising animals (Wigier, 2018 et al). From the total land fund, the agricultural surface is represented by "the agricultural land, owned by natural or legal persons and classified as follows: arable land, pastures and natural hay, vineyards and wine nurseries, orchards and fruit nurseries" (INSSE, 2022).

The use of agricultural land in the European Union and Romania

Agricultural land in the European Union is characterized by great complexity, determined by the soil structure, geographical position and climatic conditions. In addition to the physical-geographical conditions, the use of various agricultural technologies and practices, as well as the labor force, significantly influence the level of agricultural production in the member countries (Călina et al. 2017). According to the statistical data available for the EU-27 (Eurostat, 2022), an increase in agricultural

production and gross value added is observed over the last 10 years. However, growth is quite slow compared to the EU's main competitors, such as China, the USA and Brazil (Adenuga et al. 2021). However, agriculture remains a very important economic sector for the member states of the European Union (EU), reflected in the significant share in the formation of their gross domestic product (GDP) (Cummings et al. 2016; Lubova et al., 2020).

According to the latest statistical data available (Eurostat, 2022), in 2016, in the EU, farms used 191.9 million hectares of land, representing 47% of the total land fund. Of this area, 156.7 million hectares represent the agricultural area used (Eurostat, 2022), which includes arable land, family gardens, pastures and hayfields, permanent crops (INS, 2022). There are large variations between the EU member states regarding the share of areas covered by farms in the total land stock: from one fifth in countries such as Cyprus, Sweden and Finland, two thirds in Austria, Hungary and Denmark and three quarters in Ireland (Eurostat, 2022). France and Spain have the largest agricultural areas used in the European Union.

Regarding agricultural holdings, in 2016 a number of 10.3 million farms were reported at EU level. Most are small in size and are typical subsistence and semi-subsistence farms, this category of farms increasingly attracting the attention of policy makers and rural stakeholders (Davidova and Bailey, 2014).

A very small number are represented by large farms, which reduces the speed of land concentration mainly in the new Member States (National Rural Strategic Framework, 2021; Castillo et al., 2021; Cienciála et al. 2022; Eurostat 2021). A third (33.3%) of EU farms are located in Romania (Gradinaru and Mocuta, 2017), more than a tenth in Poland (13.7%) and Italy (11.1%) and less than a tenth in Spain (9.2%). On average, farms in the EU have an area of 15.2 hectares. Two thirds of these have less than 5 hectares and only one tenth have 30 hectares or more (Eurostat, 2021). Farms with more than 100 hectares represent 3.0% of all farms.

Out of all EU member countries, large farms have the highest share in the Netherlands (23.2%), Denmark (15.7%), the Czech Republic (19.4%) and Slovakia (16.2%) (Klikocka et al, 2021). Comparing the reporting year 2016 with 2005, a decrease in the number of agricultural holdings can be observed by 4.1 million farms, representing 28% of their total (Eurostat 2021). The decrease was mainly due to farms smaller than 5 hectares (3.5 million). The category of farms larger than 100 hectares registered an increase in the analyzed period due to the merger of small farms. (Eurostat 2021, Guiomar et al, 2018).

The evolution of agricultural production in Romania, in relation to the EU average, takes into account the production potential of Romanian agriculture and the opportunities to mobilize certain additional resources, so that Romania gets closer to the agricultural performance, standard of living and food quality of developed European countries (Constantin, 2017; Feher et al., 2017). The scenarios designed for the evolution of Romanian agriculture and for reducing the gap with developed European countries, are focused on different growth rates of the analyzed indicators, based on higher or lower probabilities. In a scenario that assumes a growth of 3.5%, with an agricultural production level of 2530 EURO/ha, it would place Romania at the level reached by Hungary until 2027 and at the average level for the EU 27 until 2035 (Popovici et al, 2018).

Romania is one of the European countries with the most favorable land and climatic conditions for agriculture (Pocol, 2013). Thus, Romania's natural conditions indicate that over 60% of the country's total surface can be used for agricultural activities (Jurjescu et al., 2020).

The quality of rural areas in Romanian agriculture is given by nature and the ecological premise of product competitiveness (Constantin, 2017). Romania faces the problem of land fragmentation, its agriculture being one of subsistence and semi-subsistence. The excessive fragmentation of land is a consequence of the inadequate legislative framework (Land Law), the reluctance of farmers towards association and cooperation and insufficient subsidies (Popescu et al, 2016). In Romania the grabbing phenomenon has reached alarming proportions, this together with the excessive fragmentation of the land has led to poor agricultural performance compared to other EU 28 countries (Constantin, 2017).

Studies on how to use agricultural land:

PAZ et al., (2020), state that over time, technological developments have made it possible for human societies to adopt more intensive forms of agriculture, which have increased resource production and food security. Due to some complex reasons, it is found that there are differences between the surface of the agricultural land and the area actually used, because not all the land is properly utilized (Awasthi, 2009).

BURJA et al., (2020), show that by concentrating land and grabbing it, the sustainable development of agricultural holdings in rural areas is significantly threatened, with cultural, social and environmental effects.

Areas with a massive concentration of land (almost 80% of all Local Administrative Units) have a low socio-economic level (POPOVICI et al., 2018).

A study published by Kocur-Bera, (2016) shows that there are two groups of factors that have an impact on agricultural land prices. The first group includes environmental factors (soil quality, water conditions, climatic conditions and terrain), and the second contains spatial and organizational factors (exogenous and endogenous). Land located near cities is acquired for various reasons, for example: efficiency of agricultural production and possibilities for investment in buildings and roads. The Common Agricultural Policies represent a very important factor in increasing land prices, thanks to the Rural Development Program (Bórawski et al., 2019). Farmers are willing to pay more for land when they can get subsidies. Support in less favored areas is lower and farmers take this into account when buying land (Zawalińska et al., 2013).

According to Eurostat (2021) the level of land prices depends on a number of factors, be they national (laws), regional (climate, proximity to networks) and localized productivity factors (soil quality, slope, drainage and so on), such as and market forces of supply and demand (including the influence of foreign ownership rules) (Vilček et al, 2022).

In all EU regions for which data are available, buying arable land was more expensive than buying permanent grassland (20 times more expensive in the Greek islands of the North Aegean (Voreio Aigaio) and in the Spanish region of Murcia). Also, buying irrigated arable land was more expensive than non-irrigated arable land in almost all regions (it was almost six times more expensive in the Spanish region of Murcia) (Eurostat, 2021).

Land fragmentation is another determining factor in price calculation. There are large areas of land in Romania where it is difficult to buy agricultural land. The potential to increase the land area in many areas in Romania is quite difficult to achieve. The buyers of agricultural land are large farms, which supply the market with most of the production of goods (Burja et al, 2020). The price of the land depends on the possibility of using it for non-agricultural purposes, the location and the type of rural area (Czyżewski and Trojanek, 2016).

MATERIAL AND METHODS

For the analysis of the use of agricultural lands and their prices at the level of Romania, of the Development Regions in the context of the EU-27, available data provided by Eurostat (Figure 1) and the National Institute of Statistics of Romania - TEMPO database were interpreted Online (Figure 2). On the basis of these platforms, graphs and tables were created and interpreted that highlight: Agricultural area in EU-27, Number of agricultural holdings and agricultural area used (AU), Area of the main categories of agricultural land used, Area cultivated with the main crops, Agricultural area in Romania's development regions, Agricultural land prices at the level of the European Union, Romania's position in relation to other EU member states according to the price per hectare of agricultural land, Evolution of agricultural land prices in Romania's development regions.

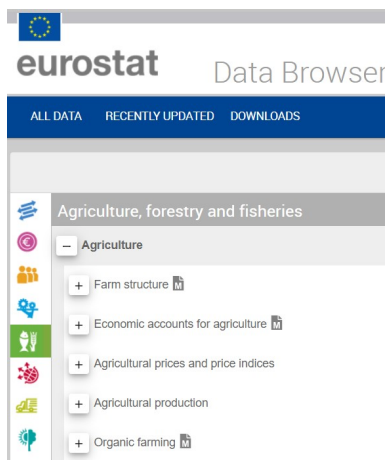


Figure 1. Eurostat 2023 database

Source: https://ec.europa.eu/eurostat/databrowser/explore/all/all_themes

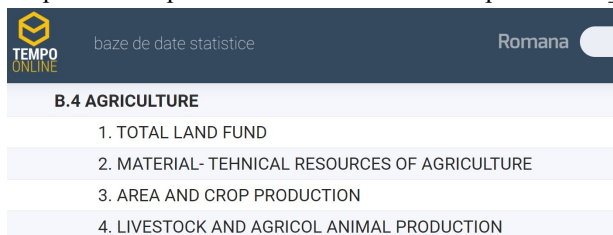


Figure 2. National Institute of Statistics of Romania - TEMPO Online 2022 database

Source: <http://statistici.insse.ro:8077/tempo-online/#/pages/tables/insse-table>

RESULTS AND DISCUSSIONS

More than half of the agricultural area within the member states of the European Union belong to France (17.81% of the total), Spain (15.06% of the total), Germany (10.23% of the total) and Poland (8.93 % of the total). A quarter of the total agricultural area (25.90%) belongs to Romania, Italy, Greece, Bulgaria and Hungary. The rest of the agricultural area (22.07%) is represented by 18 member states of the European Union (Eurostat, 2022a), (Figure 3).

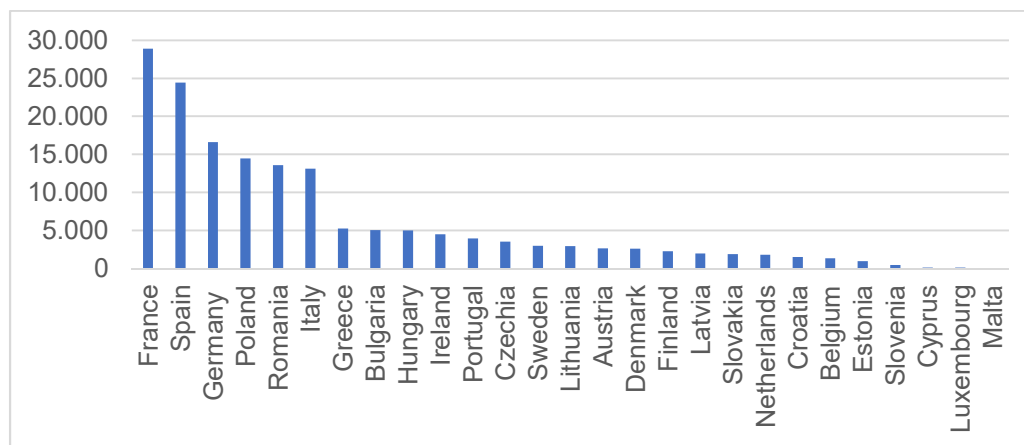


Figure 3. Agricultural area in the EU 27, at the level of 2020 (hectares)

Source: own processing based on data provided by Eurostat, 2022a

Analyzing the land fund in Romania based on the data provided by the National Institute of Statistics, the Tempo Online Database, it is observed that the largest share is represented by the agricultural area - approximately 61% of the total. Romania ranks fifth in terms of agricultural resources, after countries such as France, Spain, Germany and Poland.

In Romania in 2020, there were 2.887 thousand agricultural holdings that used 12,763 thousand hectares of agricultural land. Following the analysis of existing data according to the results of the 2020 General Agricultural Census, a decrease is observed between the reporting year 2002 and 2020, in terms of the number of agricultural holdings of 1.598, respectively 36%, and the used agricultural area decreased by 1.168 thousand ha, respectively by 8.4%. The decrease in the number of agricultural holdings led to the increase of the average agricultural area per holding by 30%, from 3.11 ha in 2002 to 4.42 ha in 2020 (INSSE, 2022), (Figure 4). In the North-West region of Romania in 2020 there were 443 thousand agricultural holdings using 1783 thousand ha of agricultural land.

According to the data analyzed in 2020, the agricultural area used was 12,763 thousand ha. In the course of ten years, since the General Agricultural Census of 2010, the agricultural area decreased by 543 thousand ha (4.1%). In 2020, arable land and permanent crops increased by 258 thousand ha (3.1%), respectively by 32 thousand (10.4%), while the area with pastures and hayfields decreased by 783 thousand ha (approx. 17.4%) compared to 2010 (INSSE, 2022) (Figure 5). In the structure of the agricultural area, the share of arable land was 67.2%, which indicates an increase of 4.7

percentage points compared to 2010, the share of pastures and hayfields was 29.2%, a decrease of 4.7 percentage points, while the area of permanent crops had a share of 2.7%, increasing by 0.4 percentage points.

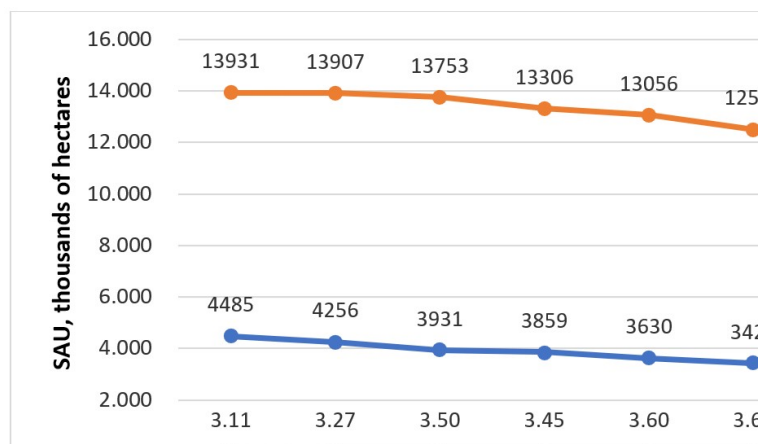


Figure 4. Number of agricultural holdings and used agricultural area (SAU)
Source: own processing based on data provided by the National Institute of Statistics in Romania

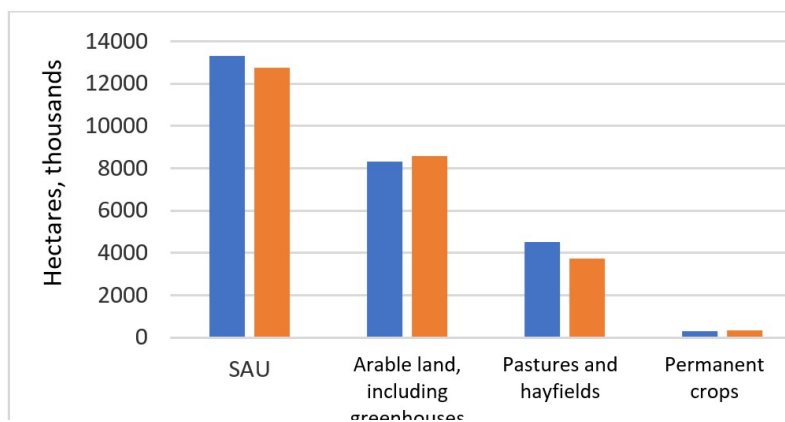


Figure 5. Area of the main categories of agricultural land used (thousand ha)
Source: own processing based on data provided by the National Institute of Statistics in Romania

At the level of 2020, the main crops in the arable land are: corn, common wheat, sunflower and rapeseed, totaling a percentage of 73.1% of the arable land compared to approx. 67.7% in 2010 (INSSE, 2022) (Figure 6). In specialized literature, depending on the indicator of agricultural and arable surface per inhabitant, the following classification is used (Merce and Pocol, 2009):

- countries that have rich agricultural land resources (more than 0.40 ha of arable land/person);
- countries with average agricultural land resources (between 0.20 and 0.39 ha of arable land/person)
- countries with poor agricultural land resources (less than 0.20 ha of arable land/person).

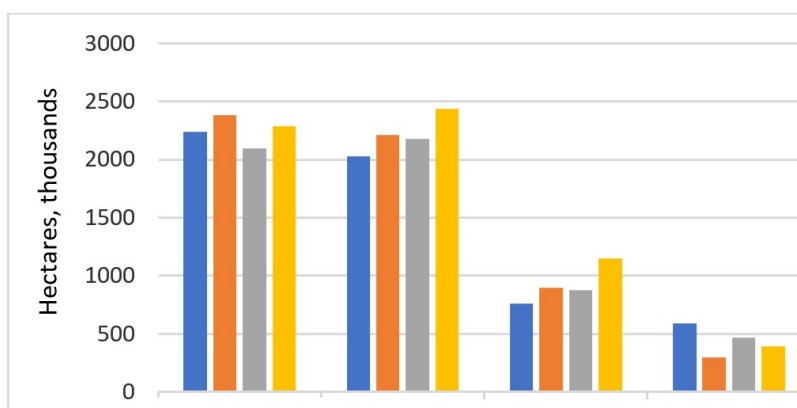


Figure 6. The area cultivated with the main crops (thousands of hectares)
Source: own processing based on data provided by the National Institute of Statistics in Romania

Romania, according to the classification, falls into the category of countries with rich agricultural land resources, the agricultural area being over 0.60 ha/inhabitant, and the arable area being over 0.40 ha/inhabitant (Table 1). The slight increase observed in the period 1992-2014 in the two categories is mainly due to the decrease of the total population of Romania, as well as of the rural population (National Strategic Rural Framework, 2021).

At the level of the development regions of Romania, according to the existing agricultural area, it can be observed that the South-Muntenia region has the largest area, i.e. 2,283,000 ha in 2020, due to its geographical position in the Romanian Plain, an area favorable to agriculture. The smallest agricultural area is found in the Bucharest-Ilfov region, with only 79,000 ha, due to the fact that it is the smallest region in terms of area (1,821 km²), composed of Bucharest municipality and Ilfov county. The North-West development region has significant agricultural areas of 1,789,000 ha, which places it above the national average of 1,595,375 ha (INSSE, 2022), (Figure 7).

Table 1

The evolution of the agricultural area and the arable area/capita in Romania, in the period 1992-2014

Year	Agricultural area/inhabitant (Ha)	Arable area/inhabitant (Ha)	Agricultural area/dwelling in rural areas (Ha)	Arable area/dwelling in rural areas (Ha)
1992	0.64	0.40	1.39	0.88
1996	0.64	0.41	1.43	0.90
2002	0.65	0.41	1.45	0.92
2008	0.65	0.42	1.51	0.97
2014	0.65	0.42	1.50	0.97

Source: own processing based on data provided by the National Institute of Statistics in Romania

Among EU member states, the Netherlands recorded the highest purchase price for a hectare of arable land in the EU (on average €69,632 in 2019). The price of arable land in each region of the Netherlands was above all other national averages available in the EU. However, of the EU regions for which data are available, the highest prices

for arable land were in the Spanish region of the Canary Islands (an average of €120,477 per hectare in 2020).

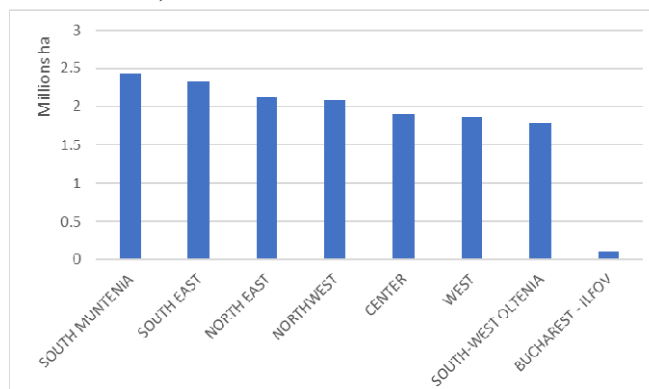


Figure 7. The agricultural area in the development regions of Romania, 2022

Source: own processing based on data provided by the National Institute of Statistics in Romania

Table 2

Romania's position in relation to other EU member states according to the price per hectare of agricultural land

The country	Price per hectare in Euro
Croatia	3440
Estonia	3772
Slovakia	3984
Lithuania	4127
Latvia	4182
Hungary	4893
Bulgaria	5328
France	6080
Romania	7163
Finland	8524
Czech Republic	9477
Sweden	10100
Poland	10711
Greece	12599
Spain	12901
Danemarca	17491
Slovenia	21451
Ireland	25724
Italy	35447
Luxembourg	46500

Source: own processing based on data provided by Eurostat, 2022b

Arable land was the cheapest in Croatia, with a hectare costing an average of €3,440 in 2020. Regionally, a hectare of arable land cost the least in the south-west (Yugozapaden) region of Bulgaria (on average €2,051) (Eurostat, 2022).

According to Eurostat, Romania ranks 12th out of 23 states for which data were reported for the year 2021 (Eurostat, 2022b) (Table 2, Figure 8).

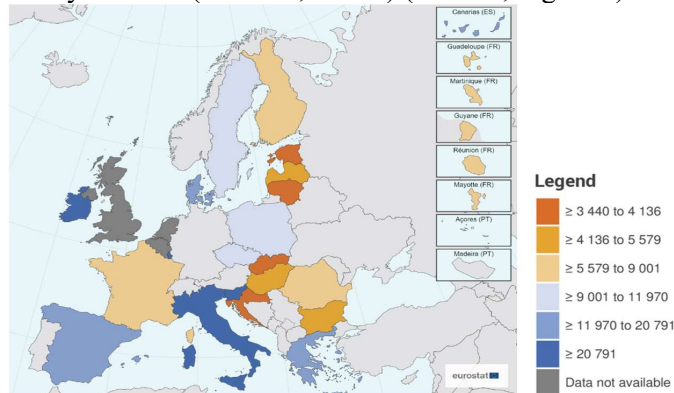


Figure 8. Agricultural land prices at the level of the European Union
Source: Eurostat, 2022b; unit of measure: Euro per hectare

According to the data provided by Eurostat, 2022 (Figure 9) the price of agricultural land in the development regions of Romania has increased in recent years, reaching the following values in 2020: North-East 6,621 euro/ha, South-East 7,849 euro/ha, South-Muntenia 8,245, South-West Oltenia 7,856 euro/ha, West 8,053 euro/ha, North-West 6,261 euro/ha, Center 7,267, Bucharest-Ilfov 1,1615. It is found that in the Bucharest-Ilfov development region the price per hectare of agricultural land is the highest. It is also observed that the lowest price of Agricultural land is found in the North-West development region.

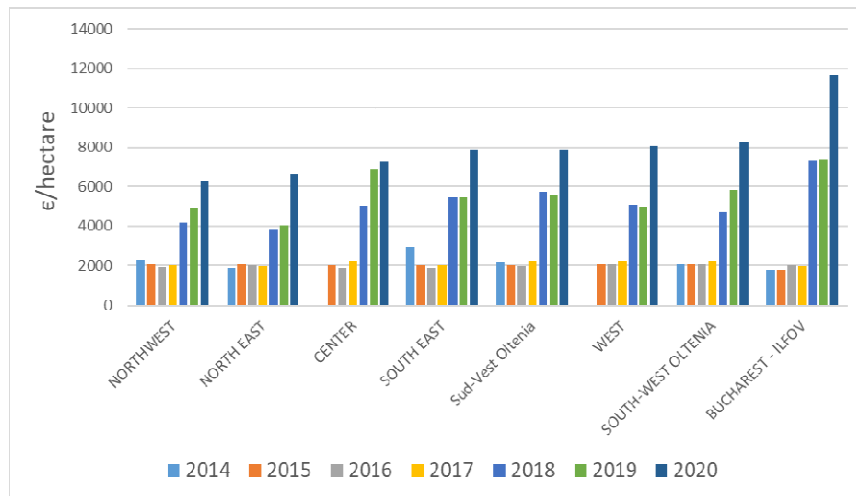


Figure 9. The evolution of agricultural land prices in the developing regions of Romania
Source: own processing based on data provided by Eurostat, 2022b

According to the Ministry of Agriculture and Rural Development, up to now more than 700 thousand hectares of agricultural land have been bought by foreign citizens on Romanian territory (Figure 10), out of a total of 12,502,550 ha, i.e. approximately 5.6%. It is noted that Italian citizens bought approximately 24% of the area sold to foreigners, with them in the first position, followed by Germans with 16% and Arabs with 10%.

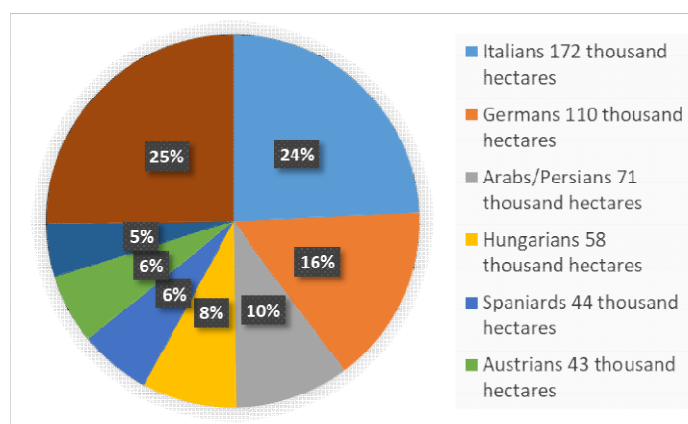


Figure 10. The situation of the land bought by foreigners in Romania

Source: own processing of data provided by the Ministry of Agriculture and Rural Development

CONCLUSIONS

Land as a factor of production plays a vital role in the agricultural sector as compared to other sectors. The efficient functioning of agricultural land markets is essential in determining efficient production systems and structures and in their contribution to sustainable development at the level of society.

The price level of agricultural land depends on several factors, such as regional aspects (geographical position and proximity to big cities), environmental factors (soil quality, water conditions, climatic conditions), Common Agricultural Policies (by granting subsidies to farmers), as well as increasing demand (through buying and selling regulations). All these factors led to the increase in the attractiveness and prices of agricultural land in Romania during the analyzed period.

Land transfer through sale is usually very limited due to high transaction costs, credit market imperfections and can also involve complex legal requirements and family issues. At the level of the European Union, less than 2% of the total agricultural area used (AU) is sold each year. Therefore, the transfer of agricultural land is reassessed through inheritance, an aspect that leads to insufficient exploitation of agricultural land.

Land leasing is an alternative to purchasing agricultural land and is increasingly accepted as a mechanism for securing land ownership. A major factor contributing to this trend is the high purchase price of farmland due to the general lack of land that comes on the market for sale each year. For those who lease the agricultural land, it serves as a means of earning income from agriculture without having to commit a lot of money to purchase the land, while for the owner, leasing the land serves as a great opportunity to earn income without having to cultivate the land.

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