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Land Concentration, Land Grabbing and Sustainable Development of Agriculture in Romania

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Abstract: Land grabbing has become a priority topic in academic research and a political concern, due to interests in the dynamics of the phenomenon and its negative impact on the sustainable development of agriculture in rural areas. This phenomenon generates changes in production systems of agriculture with adverse environmental consequences, adversely affects socio-economic and cultural conditions and leads to lower overall efficiency in agriculture. This article analyses the links between land concentration, land grabbing and sustainable development of agriculture in Romania compared to other old and new EU-28 countries. The results of the research show that the land grabbing in Romania has a significant dimension compared to the other countries analyzed, which has led to an inadequate agrarian structure and adverse effects on the sustainable performance of agricultural holdings and the sustainable development of rural areas.

Keywords: land grabbing; land concentration; sustainable development; agrarian structure; performance

1. Introduction

Agriculture is an essential branch of the economy due to its role in food security, employment in rural areas and biodiversity insurance, as well as in the preservation and protection of the natural environment. As such, the role of the Common Agricultural Policy (CAP) in strategic decisions regarding the future of the European Union seems to be a fundamental issue. Since its launch in 1962, the successive reforms of the CAP have focused on creating more market-oriented agricultural sectors and increasing their competitiveness, as well as improving income support to producers and adapting environmental requirements into the development strategies.

The recent CAP reform of 2013 was integrated into the Europe 2020 Strategy to achieve green growth in the agricultural sector and the rural economy (i.e., smart, sustainable and inclusive growth). Such challenges had the following objectives [1]:

- viable food production;
- sustainable management of natural resources and climate action;
- balanced territorial development.

The CAP reform after 2020 will start from a need to modernize and simplify, so that European agriculture can develop smartly, resiliently, sustainably and competitively. The agricultural sector must provide safe and high-quality food to over 500 million consumers, contribute to the dynamic and sustainable development of rural areas and respond to citizens' expectations regarding quality of life, state of health, the environment and climate. The unique European agricultural model implemented through legislative measures regarding the CAP has focused on increasing the economic viability

of farms, improving environmental and weather conditions and strengthening the socio-economic fabric of rural areas. The creative development is a cross-cutting objective implemented by fostering knowledge, innovation and digitalization in agriculture and rural areas. The Multiannual Financial Framework (MFF) for 2021–2027 pursues nine specific objectives through the Common Agricultural Policy: (i) providing a fair income to farmers, (ii) increasing competitiveness, (iii) rebalancing power in the food chain, (iv) determining actions to fight climate change, (v) caring for the environment, (vi) preserving landscapes and biodiversity, (vii) supporting generational renewal, (viii) establishing vibrant rural areas and (ix) protecting food and health quality.

The purpose of our research is to evaluate the link between land concentration, land grabbing and the sustainable development of Romanian agricultural holdings in comparison with other EU member states. The analysis is also useful for countries that joined the EU later, and for European countries with developed agriculture, as some aspects of land grabbing are common, and the achievement of an optimal agrarian structure is an essential issue of agriculture and rural areas in all countries.

Authorities with national and international competence in their respective countries can influence decisions on the land grabbing phenomenon and thus contribute to the sustainable development of agriculture, environment and rural space. The impact of large-scale land acquisitions (LSLAs) is difficult to quantify at present, but must be monitored in the context of the Sustainable Development Goals set by the international community.

The sustainable development of agriculture encompasses new dimensions for each country by including the objectives of the 2030 Agenda into development strategies, including ending hunger, achieving food security, improving nutrition and promoting sustainable agriculture (Goal 2). Romania's National Sustainable Development Strategy 2030 aims to develop a sustainable and competitive agri-food sector to improve quality of life in rural environments. It aims to ensure living conditions similar to those in urban areas, to encourage local and ecological production and to promote traditional and mountain products with added value [2].

The sustainable development of agriculture and rural spaces depends on an efficient use of production factors including agricultural land, the labor force and technical factors. The sizes of farms, depending on the area of land used, have direct economic, social and environmental implications. Excessive fragmentation of the land means the existence of agricultural holdings that have not adapted to the requirements of the market economy, including low incomes for farmers, non-competitive agricultural technologies, small agrarian productions and the impossibility of accumulating capital to achieve economic growth. The existence of exaggerated-scale farms, on the other hand, creates environmental pressures by affecting biodiversity, as well as through the insufficient use of labor in rural areas. These farms can also lead to the destruction of local food traditions, and the practice of a type of agriculture that does not comply with ecological principles and can affect quality of life.

Having farms of an optimum size that are able to use production factors efficiently is a global objective for agriculture on which the food security of populations depend [3]. This process involves land consolidation, but only up to specific dimensions, beyond which the global marginal yield decreases and adverse economic, social and environmental effects begin to appear.

The utilization of land consolidation to achieve appropriate agrarian structures is not a simple process; it started in the second half of the last century and its practice has continued to expand. However, the process is complicated in consideration of objective difficulties related to the functioning of the land market and transaction costs. Other difficulties are also common, including personal issues related to attachment to the land, the establishment and observance of property rights and risk-taking.

The conflicting interests between small farmers and large farms gave rise to the land grabbing phenomenon. This phenomenon often receives the attention of academic literature, media and NGOs, which point out the negative consequences of losing control over the land and restricting family farming, which is characterized by the European model of agriculture.

The Tirana Declaration defines land grabbing as acquisitions or concessions that include one or more of the following: (i) a violation of human rights, particularly the equal rights of women; (ii)

the lack of free, prior and informed consent of the affected land-users; (iii) the lack of a thorough assessment, or a disregard of social, economic and environmental impacts, including the ways in which they are gendered; (iv) a lack of transparent contracts that specify clear and binding commitments about activities, employment and benefit sharing; and (v) a lack of effective democratic planning, independent oversight and meaningful participation [4].

The debate on large-scale land acquisitions (LSLAs) is complex and reflects the views of two categories of actors. The first point of view argues in favor of large companies that mobilize capital and control large tracts of land, and supports the need to restructure agriculture by concentrating areas of a sufficient a size to favor the modernization of agricultural systems. These companies focus on intensive technologies and integration into global markets through foreign investment and export growth.

The other point of view reflects the interests of those who traditionally use the land (farmers, pastoralists and indigenous people) and have small farms, who claim that LSLAs threaten human rights, food security, their incomes, quality of the environment and the sustainable development of the rural areas [5]. The impact of LSLAs is difficult to quantify at present, but needs monitoring in the context of the Sustainable Development Goals set by the international community.

Land is not a mere commodity that is traded on the market at a particular value. The transfer of property rights among people makes land ownership is a social relationship, and the connection between people and land amplifies a feeling of national and local identity [6]. Rural landscapes and celebrations related to land cultivation have created emotional connections to rural areas by their inhabitants. This connection is compromised by the loss of ownership of the land.

Land grabbing is a global problem that manifests itself at different intensities. Research shows that the phenomenon is present mainly in Africa [7], South and Central America [8], Asia [9], and former Soviet Eurasia [10]. However, it is also present in Europe, in particular in Central Eastern European countries [11]. In Romania in particular it occurs on a large scale, as foreign investors control almost 40% of the arable area [12].

Land concentration has always been a trend in Europe. Currently, however, it is occurring at an alarming rate, which is likely to affect the sustainable development of European rural areas. The trend is present not only in the states that joined the EU more recently (of which this study recognizes Romania, Hungary, and Poland in particular), but also Germany and France.

2. Methodology

The research illustrated in this paper arises from a need to determine the link between land grabbing and the sustainable development of agriculture in Romania compared to other EU countries.

Since 2000, land grabbing has become an essential concern for the academic community, civil society, governments, corporations and financial institutions. Although the phenomenon is global, there is no accepted definition that fully captures its characteristics. Frequently, specific terms are used to mark the takeover of large land areas, such as "land consolidation", "land concentration" and "large-scale land acquisition". These terms are not synonymous; they express the interests of stakeholders who want to highlight the economic aspects of the phenomenon without mentioning the violations of human rights, the negative consequences on the environment or the socio-cultural implications.

The debate on land grabbing becomes complex when considering the social aspects of the phenomenon and their implications on economic development. Opinions are polarized, and arguments are often mutually exclusive. The phenomenon is associated with "Accumulation by Dispossession", which is the neoliberal variant of the "primitive accumulation of capital" [13]. The two concepts share ideas of the dispossession of peasants from the primary means of production within the limits of the law, the transformation of work into capital and the practice of peasants being forced to work solely as a matter of work.

A remarkable definition provided by Eco Ruralis (a grassroots association in Romania made up of small farmers who practice organic and traditional farming based on environmentally conscious

principles) is that land grabbing represents the control of an amount of land that is more significant than the typical local amount, by any person or entity (i.e., public or private, foreign or domestic), through any means (i.e., "legal" or "illegal"), for purpose of speculation, extraction, resource control or commodification at the expense of peasant farmers, ecological agriculture, land stewardship, food sovereignty or human rights [14].

Sustainable agriculture is characterized by all elements of the sustainable development concept, namely, competitiveness and economic efficiency over a long term period that ensure agricultural production systems through healthy eating, increasing the quality of life for people in rural areas, the preservation of natural resources and reducing negative impacts on the environment [15]. To these elements, we can add cultural sustainability, which involves observing and promoting a set of values according to cultural factors, as well as political viability: good governance, democracy and respect for the rights of individuals. We believe that there is an active link between land grabbing and all the elements that characterize the sustainable development of agriculture.

Our research presents disparities in the sustainable development of agriculture between Romania and the other EU Member States based on indicators that characterize performance, economic growth and environmental impact (European Commission).

Agri-environmental indicators are in line with the set of indicators developed by the European Commission that monitor agricultural sustainability [16] and facilitate assessment of the link between land grabbing and environmental impact. Also, our information and concrete data reviews illustrate the effects of land grabbing and other elements of sustainable development in agriculture and rural areas.

To achieve the purpose of this paper, we used a comparative process to determine and analyze the dimensions at which land concentration and land grabbing manifest themselves in Romania and other countries, as well as the influence of the phenomenon on the sustainable development of agriculture.

The comparison highlighted the common elements and disparities between the agriculture situation in Romania and other countries that joined the EU more recently (Poland and Hungary) as well as countries with developed agricultural systems (Germany and France). These countries have similar agricultural potentials, which enables us to draw realistic conclusions following the comparison.

The comparison with Germany and France enables us to realistically contrast the agricultural sustainable development policies in Romania with certain disparities concerning the countries with developed agricultural systems. The comparison with Hungary and Poland shows the position of Romania vis-à-vis two countries that have implemented similar agricultural reforms.

The definition and characterization of the land grabbing phenomenon and land concentration are based on academic literature, on studies promoted by national and international bodies and on the concerns expressed in the media of various NGOs. Land grabbing is a complex phenomenon that occurs on the border of legality and morality, and assessments can be contradictory as they depend on a diverse set of interests.

This research has had difficulties due to a lack of real data regarding the magnitude of the land grabbing phenomenon in Romania, but also in other EU countries. Therefore, the argumentation of real situations is based on a synthesis of information published in public documents. Most of the data used to assess the disparities regarding the sustainable development of agriculture holdings in Romania and other EU countries came from the Eurostat database. The data were processed and presented in tables and charts, based on which we extracted our interpretations. Random factors generated by the climatic conditions can also have an effect on agriculture, and for this reason some series of data related to the performance of agricultural holdings were dynamic.

3. Discussion

Farmland is the essential natural resource on which the food security of future generations depends, and for this reason its proper management is a matter of social, moral and ethical responsibility. Agricultural land is not only a critical production factor, but also the bearer of the rural landscape and of civilization itself. The ownership and control of land that is passed down through generations

provides a sense of security to the inhabitants of the rural area. The establishment and existence of national states are related to the territories that belong to them, and according the land facilities and economic activities that are developed thereupon. The regulation of international relations based on a concept of the free movement of goods, services, labor and capital has not provided the instruments required to protect landed property [17].

The acquisition of agricultural land is a phenomenon that has manifested itself throughout history. However, the magnitude and goals of purchasing land have recently reached new dimensions with the potential for unforeseen economic and social consequences that can affect the quality of the environment and life in rural areas. Large-scale land acquisitions lead to the existence of small numbers of agricultural holdings that concentrate and control large tracts of land. These acquisitions change the small-scale agrarian production models that have traditionally been used by family workforces, and restructures them into large-scale agricultural production systems that are based on intensive and commercially oriented technologies [18].

Economic factors can lead to a renunciation of land properties by small farmers, in particular the low competitiveness of the market. In addition, young people often prefer urban civilization to the detriment of the rural culture and government policies, including CAP subsidies, which favor large farms [19]. Nevertheless, a farmer's attachment to their land is usually secure, but often coercion, cheating or orchestrated publicity are used to create confusion, in order to take control of their land.

Land grabbing in the EU is favored by several factors, including: differential land prices; land speculation and land "artificialization" (the change of land use from agriculture to urban sprawl, real estate or an enclave of tourism); processes of land privatization and land consolidation; a variety of EU agricultural, food and energy policies (e.g., its biofuels policy); and EU trade, financial and investment policies and subsidies [20].

The study conducted by the European Parliament's Committee on Agriculture and Rural Development synthesizes the negative consequences of farmland grabbing in the EU, and specifically the disappearance of family farming and the problem of "entry denial" (currently, many rural young people in the world, including Europe, do not want or cannot become farmers for economic reasons such as lack of capital and low remuneration, but also for non-economic reasons such as an attraction to urban living). Other consequence specified are the rise of large agricultural corporations; threats to European food security, food sovereignty and local food cultures; rural unemployment; emigration; and land degradation and decline.

Nonetheless, land grabbing is not an illegal or immoral practice in all cases. The phenomenon has a variety of manifestations related to the actors involved and the forms used, such as purchase or leasing by economic entities—usually multinational entities, banks, insurers, investment funds, speculators or industrial farms. Other forms include masked purchasing through "pocket contracts" (contracts that aim to find "solutions" to the legal restrictions regulating the land deals), purchase under a masked identity and illegal retrocession.

The subsidy scheme of the CAP has accentuated land grabbing and is directly related to owned agricultural areas (subsidy per hectare of farmland). The decreased return on the capital invested in industrial production and increased risk on the financial derivatives market, plus new demands from bioenergy, are all factors that have led to increased land demand and the migration of financial capital towards the agricultural sector.

The increased demand for land has inevitably led to an increase in agricultural land prices and rents. The disparities regarding farmland prices and rents have also favored large-scale land acquisitions [21], a phenomenon that has been especially present in countries where prices are still low and legislation regarding agricultural land acquisition by foreign citizens is favorable. In Romania, this type of difference is still present in different agricultural areas, and the demand for land continues to be dynamic.

4. Results

4.1. Land Grabbing in Europe

Even though the land grabbing phenomenon is often described as being limited in the EU compared to other continents, it is currently experiencing an accelerated dynamic, and the concentration of agricultural lands is a real concern for the people promoting the CAP. Based on statistical data, the European Parliament estimates that in 2013 only 3.1% of farms controlled 52.2% of the farmland in Europe, and 76.2% of farms had the use of only 11.2% of the agricultural land [22]. Starting from the adverse effects of agrarian land concentration, the Resolution adopted by the European Parliament proposes measures to limit the phenomenon and facilitate farmers' access to land.

Land grabbing has its particularities in each country in terms of size, causes and implications. To limit the phenomenon, concrete measures have been established.

In France [23], the land policies were modified profoundly to guarantee the ownership of land by small farmers. However, these policies now have undesirable side effects, because they prevent fair access to the property, particularly access for young farmers who do not come from agricultural families. By stipulating strict rules in the leasing contracts, the conflict between landowners and farmers favors the latter. The monitoring of farming structures established in the 1960s provided a government license to work the land. The licenses granted by the local commissions gives priority to new farmers and farms that are too small to be viable. Further, the society for land planning and rural establishment (SAFER) was set up at the local level and aimed to prioritize agricultural land use, restructure farms and settle new farmers by purchasing agricultural lands and reselling them to other farms. There are severe restrictions on the purchase of property in France, but even so these can be circumvented. An example is the Bordeaux region, where Chinese investors have bought about 100 vineyards.

Land acquisition in France is difficult for new farmers due to land grabbing, "artificialization" for non-agricultural projects and land concentration within the farming sector. The level of land in France was encouraged by CAP subsidies and environmental regulations. In 1955, 80% of all farms in France had less than 20 ha; the average size today is around 80 ha.

Of course, the situation of the land areas owned by agricultural holdings in Germany bears the imprint of the reunification of East Germany with West Germany. The existence of smaller fields in the West and larger areas located to the East of Elbe River characterize the farming landscape [6]. The land retrocession after 1989 to the former owners who possessed less than 100 ha during the German Democratic Republic times and had been expropriated between 1945 and 1949, were made by purchase, at a reduced price, from the Land Administration and Privatization Agency (BVVG Bodenverwertungs- und -Verwaltung GmbH). Between 1991 and 2012, the number of holdings of more than 5 ha has halved due to an accelerated process of land concentration [24]. Major investors control large areas of land (KTG Agrar, a financial investor specializing in large farming operations controls more than 38,000 ha). This process implies a substantial erosion of culture and social life in rural areas.

As a result of the agricultural land concentration that manifested in Germany and the consequences of this phenomenon, legislative measures were adopted to limit the practice. The German Constitutional Court ruled in its judgment of 12 January 1967 (1 BvR 169/63, BVerfG 21, 73-87) that the trade of rural lands need not be as free as the trade of other capital, as the land is unrenewable and indispensable. An equitable legal and social order requires the public interest in land to be taken into account far more than in the case of other properties [22].

In Hungary, the formal statistical data show that the size of farmland grabbing is insignificant, because the legislation regarding the acquisition of agricultural land by foreigners is restrictive. However, in the last two decades, approximately 1 million ha of land has been bought by foreigners through "pocket contracts". After the legal restrictions on the sale of land were removed, the respective contracts were registered. In 2015, the government initiated a tender programmed to sell agricultural

land to farmers (Hungarian citizens living in Hungary), including about 200,000 ha in 10 ha plots, which were granted through preferential loans.

Poland does not formally prohibit the purchase of agricultural land by foreigners, but the conditions imposed on the purchase of estate are restrictive. Foreigners may purchase a property if they meet the following requirements: they are married to a Polish citizen, and she/he has been living and doing farming in the country for at least three years. If these conditions are met, the particular plot rented by her/him may be bought [25].

To the above restrictions should be added the active intervention of the state in the sale of agricultural land by exercising the right of pre-emption and redemption by the state to purchase land in private circulation then sell it to individual farmers on a preferential basis (through the Agricultural Property Agency). Also, the purchaser must run a farm personally for 10 years. Currently, due to these restrictions, the threat of land grabbing in Poland is not considered to be significant [26].

The political changes in the Balkans after 1989 caused by the fall of communism and Yugoslavia's disintegration led to the privatization of agriculture. New agricultural structures have often proved inefficient, and as a consequence land grabbing has been favored.

In Serbia, the privatization of agriculture has hastened as a result of poor regulations regarding land property. After the sale of agricultural enterprises, the Privatization Agency granted the right of land use to the new owners only, and registered these areas in the real-estate registry as the owners' private properties [27].

This non-transparent privatization process favored land grabbing. The four largest farms in Serbia together now hold over 100,000 ha of land, and the subsidies offered by the state and the Serbian Stabilization and Association Agreement with the EU that allows foreigners to buy property have led to higher land prices and speculation. Ending land grabbing is possible only through the joint action of the organizations to provide viable alternatives in agriculture and by increasing the social pressure applied from the worker–peasant movement in Serbia.

After the fall of communism, land reform in Bulgaria went took two forms: (i) the dissolution of state-run, large-scale cooperatives, and (ii) the restitution of land owned before the collectivization of agriculture in 1946. The liquidation took place quickly and was marked by massive corruption, while land restitution took a long time and led to severe fragmentation in land ownership [28]. This aspect later favored land grabbing because, in many cases, the new owners were not interested in agriculture. Subsequent land use legislation has allowed local governments to redistribute agricultural land (if there is no intention to use it) to investors, who use the law to seize their property.

4.2. Characteristics and Examples of Land Grabbing in Romania

In almost all studies referring to land grabbing in Europe, Romania is presented as the country where the phenomenon manifests itself with maximum intensity. Data on the size of this has generated conflicting opinions, as the land cadaster, which records the ownership of land in Romania and the ways in which land has been acquired, is far from complete.

According to the data provided by the Ministry of Agriculture and Rural Development (MARD), out of a total of 9.57 million ha of agricultural land subject to Agency for Payment and Intervention in Agriculture (APIA) grants, only 3.87 million ha (40%) are included in the integrated land registration system. No subsidies are granted for 2 million ha of arable land in Romania because they are abandoned or not eligible to get support, with the plots of land being too small (less than 0.3 ha).

According to the MARD data, the area of agricultural land used by foreign individuals and legal entities was 422,000 ha at the end of 2018 (4% of the UAA). The press information presents another reality, stating that 40% of agricultural land is now in the hands of investors from outside the EU, with a further 20%–30% being controlled by investors from the EU [12]. This information refers only to agricultural lands controlled by foreigners, some of whom control vast areas (the Lebanese company "Lebanese Farm" has 65,000 ha). However, some Romanian investors control large areas of arable land,

such as the Romanian agri-food company "Transavia", which cultivates around 12,000 ha of cereals (this is a leased land located in the surroundings of Cluj [29]).

A way to control land is through the agricultural market, which in Romania operates as an oligopsony market. Small farmers do not have a grain storage capacity, but some companies have acquired or built huge storages.

Based on agricultural contracts, these companies influence agricultural production and prices. An example in this regard, provided by Eco Ruralis, is the Cargill Incorporated case, which, through the 18 silos owned by the company in Romania, controls 250,000 ha of agricultural land.

The reasons Romania attracts investments in agricultural land vary. There are large areas of land with pedoclimatic conditions that are favorable to agriculture, where the existing European subsidies and government support large-scale investors, and the rural population is ageing and often has no capital to finance agricultural activities. Of course, the low price of land in Romania (as compared with Western European countries) also attracts foreign investors.

The data presented in Table 1 show that Romania has the lowest price of land in the EU. In the Netherlands, the cost of land is 30 times higher. In Poland, which has agricultural characteristics similar to Romania, the price of a property is five times higher.

Table 1. Price of land (Euro/ha).

Country	2011	2012	2013	2014	2015	2016	2017
Germany	Data for Germany are not available						
France	5.390	5.440	5.770	5.940	6.000	6.070	6.030
Hungary	2.089	2.380	2.709	3.042	3.356	4.182	4.368
Poland	4.855	6.080	6.275	7.723	9.220	9.083	9.699
Romania	1.366	1.666	1.653	2.423	2.039	1.958	2.085
Denmark	17.476	17.562	15.708	17.209	18.752	17.584	17.328
Italy	34.257	39.342	32.532	39.247	40.153	28.985	33.538
Netherlands	50.801	52.716	54.134	56.944	61.400	62.972	68.197

Source: Eurostat, Agricultural land prices by region, [30].

At the same time, an increase in the price of land can be observed over the period analyzed, especially in the countries that joined the EU more recently (e.g., Hungary, Poland and Romania). Natural factors, as well as spatial and organizational factors, influence the prices of agricultural properties. Taking all these factors into account, the price of land in some parts of Romania is approaching the price of land in Western Europe. Even if the price of land is low in Romania, it is still high for the population living in rural areas, a fact that prevents its purchase by the inhabitants of those areas and favors land grabbing by foreigners.

Among the factors that have led to a recent increase in the price of land are a decrease in land supply and the direct subsidies granted per area—the former because many owners already sold their land before 2011, which makes land ownership profitable even if the owner does not work it directly. Land rent is higher than the yield of other investment categories. Research shows that there is a lag in cash rents before they match the level of land prices [31].

The manner in which land grabbing took place in Romania took place has, in many situations, the characteristics of "Accumulation by Dispossession" and the "primitive accumulation of capital". The transition period to a market economy in Romania involved structural reforms in the economy and a massive loss of employment from industry and state or cooperative agriculture. Restitution of land created a false alternative to available employment. Fragmentation of the land, and lack of capital, led to the formation of subsistence and non-competitive farms. In this situation, the agricultural land was sold at low prices or leased, and the old owners engaged in new capitalist farms or in other economic branches that were revived. Many rural residents migrated, or moved to urban areas that offered them better jobs.

4.3. Economic Structures in Agriculture

Land concentration is a process that has more recently accelerated in Europe. In the 2005–2016 period, the number of farms decreased in Europe by 4.2 million (about 25%), of which 85% were small farms of less than 5 ha. Significant reductions in the numbers of farms occurred mainly in Romania (0.8 million farms (i.e., 20%)), Poland (1.1 million farms (i.e., 44%)) and Italy (0.6 million farms (34%)), and reduced by almost two-thirds in Slovakia and Bulgaria [32]. The decreasing number of small farms occurred in parallel with an increase in the area of land owned by big farms, which shows that small farmers were losing control and power over their land.

Romania is a country where pedoclimatic conditions are among the most favorable in the European Union. This aspect, along with its traditions, are prerequisites to excellent quality productions in significant quantities, which can satisfy the domestic demand and provide important export availabilities based on a comparative advantage.

The agricultural area used in Romania is over 12.5 million ha (sixth place in the EU). Still, its agrarian structure is inadequate and not in line with the agriculture of developed EU countries, being somewhat similar to the states of Latin America. The inadequate agricultural structure is the leading cause of the low performance of Romanian agriculture compared to the agriculture of the developed European countries.

Research on the relationship between farm size and economic performance has led to conflicting results. Some studies consider that there is a direct and positive connection [33], while others have demonstrated an inverse relationship [34]. Additionally, some research findings have supported the existence of a nonlinear relationship [35]. Our study confirms the presence of a connection between the size of farms and their sustainable performance, and proposes the transformation of subsistence farms into small- and medium-sized commercial farms [36].

Romania has an outstanding agricultural potential (Table 2). It owns 7.2% of the utilized agricultural area of the EU-28, being close to the agriculture of Germany (9.7%) and Poland (8.3%). The population employed in Romanian agriculture represents 20.1% of the farm labor force of EU-28. We see that Romania has an almost four-times-higher labor force in agriculture than Germany. Still, the figures must be interpreted with caution, because most of the population employed in Romanian agriculture as recorded in the formal statistics do not earn their primary income from agriculture, and have other occupations or have retired from work.

Table 2. Number of holdings, utilized agricultural area and farm labor force in 2016.

Country	Number of Holdings		Utilized Agricultural Area (UAA)		Average Area per Holding, Hectares	Persons Employed in Agriculture		Farms for Self-Consumption %*
	in Thousands	% of EU 28	in 1000 Hectares	% of EU 28		in thousands	% of EU 28	
EU28	10,467.7	100.0	172,967	100.0	16.52	9,720.6	100.0	-
Germany	276.1	2.6	16,715	9.7	60.54	576.0	5.9	0
France	456.5	4.4	27,814	16.1	60.93	710.0	7.3	1.54
Hungary	430.0	4.1	4,671	2.7	10.86	247.3	2.5	59.79
Poland	1,410.7	13.5	14,406	8.3	10.21	1,608.8	16.6	18.36
Romania	3,422	32.7	12,503	7.2	3.65	1,960.3	20.1	86.39

Source: Own calculations based on Reference [32].

According to information in the press, Romanian farmers often complain about the lack of a labor force in livestock farms.

Romania's agriculture has 32.7% the number of holdings in the EU. Still, a large number of small farms practice subsistence agriculture (86.39% are farming for self-consumption). Romania has the highest number of agricultural holdings in the EU, but they are inhomogeneous, with most of them being small or having a very small size, while some are very large. The restoration of land ownership in Romania after 1989 created this situation, which led to the excessive fragmentation of agricultural land

and the establishment of a large number of agricultural holdings, followed by the property grabbing phenomenon that led to farms with extensive areas.

Land grabbing has produced significant changes in Romania's agrarian structure by reducing the number of small farms and through the emergence of farms that control vast areas of land. The number of tiny farms (having small areas of agricultural land) remains very high compared to other countries. The data in Table 3 show that 91.8% of the total numbers of farms in Romania are small farms that use less than 5 ha of agricultural land. However, they control only 28.7% of the utilized agricultural area in Romania. At the same time, large farms, which use areas of more than 100 ha, represent only 0.4% of the total number of farms, but they control 47.8% of the utilized agricultural sector. This agrarian structure is not compatible with the European model of agriculture practiced in Western European countries.

Table 3. Distribution of farms and utilized agricultural area, according to farm size, in 2016 (%).

Hectares	Farms, UAA	GE	FR	HU	PL	RO	EU-28
0-4.9	Farms	8.6	24.3	81.4	54.3	91.8	65.6
	UAA	0.2	0.8	4.8	13.2	28.7	6.1
5-9.9	Farms	16.1	9.2	6.4	21.7	5.7	12.1
	UAA	1.9	1.1	4.1	15.0	10.4	5.1
10-19.9	Farms	20.1	9.0	4.7	14.3	1.5	8.3
	UAA	5.1	2.1	6.0	19.3	5.3	7.0
20-29.9	Farms	9.7	6.0	2.0	4.3	0.3	3.5
	UAA	4.0	2.4	4.4	10.2	2.1	5.1
30-49.9	Farms	14.4	10.3	1.8	2.9	0.2	3.6
	UAA	9.3	6.7	6.3	10.6	2.3	8.5
50-99.9	Farms	17.4	19.4	1.7	1.6	0.2	3.6
	UAA	20.3	23.2	11.0	10.6	3.3	15.5
>100	Farms	13.3	21.9	2.0	0.9	0.4	3.3
	UAA	59.1	63.8	63.4	21.1	47.8	52.7

Note: GE -Germany, FR –France, HU –Hungary, PL –Poland; RO –Romania. Source: Own calculations based on Reference [37].

One notices that the distribution of the utilized agricultural area and the number of farms in Germany and France are more uniform, and that the share of medium farms is higher.

4.4. Disparities in the Sustainable Development of Agriculture

The structure of land ownership raises questions about the possibility of achieving the sustainable development objectives of Romanian agriculture, and leads to profound disparities between Romania and other countries.

The data presented in Table 4 summarizes the sustainable performance of Romanian agriculture compared to the EU-28 and the individual countries analyzed. The value of total agricultural output is an indicator often used in international comparisons to express the performance of agriculture. Agricultural production per hectare in Romania is 53% of the EU-28 average, and almost three times lower than in Germany. Gross value added (GVA) synthetically expresses the creation of the value resulting from the use of production factors. GVA is considered an essential item in measuring productivity, and the value obtained in Romania's agriculture is 57% of the EU-28 average.

Table 4. Economic disparities in agriculture (Euro/ha) in 2017.

Indicators	GE	FR	HU	PL	RO	EU-28
Agricultural output	3309.58	2531.01	1763.92	1775.7	1271.46	2397.06
Gross value added (GVA) at basic prices	1249.3	1061.6	762.9	739.9	616.7	1086.6
Fertilizers and soil improvers	127.2	120	99.8	113.4	54.1	97.7
Plant protection products, herbicides, insecticides and pesticides	108.2	117.7	84.2	81.7	26.2	73.6
Fixed capital consumption	576.5	376.6	209.1	120	208.8	354.8
Energy, lubricants	200.1	133.8	137.4	232.4	149.8	254.9
Interest paid	65	25.2	0.3	21.4	6.1	36.9
Agricultural service	139.4	161.8	92.8	36.8	16.6	105.6
Gross fixed capital formation (GFCF)	555	361.7	186.6	87.4	85.7	333.2
Labor productivity in agriculture *	28,149.5	36,426.3	7546.9	4178.9	5096.2	17,148.1
Cereals to produce grain (including seed) to/ha	7.26	7.25	5.82	4.12	5.22	5.57
Milk yield - kg/cow	7763	6956	8064	6361	3231	7021
Share of UAA under organic farming (%)	6.8	6.0	3.7	3.4	1.9	7.0
Total net emissions from agriculture1000 t of CO_2 equivalent	98,555.5	82,927.2	6587.3	7589.6	16,098.0	490,098.2

* GVA (at basic price—in euros)/AWU, average 2014–2016, Source: Own calculations based on Reference [38].

Romania has favorable conditions for agricultural crop and livestock production. However, yields and labor productivity in agriculture are low. The crop yield (kg/ha) in Romania is below the EU-28 average, the milk yield (kg/cow) is less than half and labor productivity is less than a third.

Reduced use of certain factors with a direct influence on the growth of production determined disparities between Romania and the EU-28. The use of fertilizers and soil improvers by the farm holdings of Romania is 55% of the EU-28 average, and the consumption of plant protection products, herbicides, insecticides and pesticides represents only 35%. The mechanization of agriculture is still deficient in Romania. This situation is demonstrated by the fixed capital consumption (58.8% in Romania compared to the EU-28), as well as the low use of energy and lubricants.

Agricultural services are an essential component of intermediate consumption in agriculture, and contribute to an increased agricultural performance. It must be specified who will carry these specialized services out, as well as what specific investments are required. That is why farmers prefer to hire companies that specialize in providing agricultural services [39]. In Romania, purchased agricultural services are more than six times lower than the EU-28 average.

Agricultural credit is vital for agriculture both for financing production (the production cycle in agriculture is long) and investments, as well as for the personal financing share required by projects carried out with the help of agricultural structural funds. In Romania, the loans granted to agriculture by the banking system are below the EU-28 average, and the level of interest paid for capital loans is more than six times lower than the EU-28 average, even though the cost of borrowed capital is higher than in the other European countries.

The reduced possibilities of financing agriculture in Romania cause significant difficulties in financing investments for the purchase of land, buildings, machines, vehicles and other equipment. The gross fixed capital formation (GFCF) in Romania's agriculture is almost four times lower than in the EU-28.

Sustainable agriculture involves production processes that are able to protect the environment and human health. For this, the conversion of agricultural land and the implementation of organic farming practices represent a chance for Romania due to the reduced consumption of fertilizers and pesticides in recent years. However, the share of the total green crop area out of the total UAA is low in Romania compared to the other countries analyzed in this research. Emissions from agriculture (carbon dioxide (CO2), methane (CH4) and nitrous oxide (N2O) from agricultural soils), which are responsible for climate change and its effects on the environment and (implicitly) on agriculture, are lower in Romania compared to the other analyzed countries.

The agriculture of Romania is mostly dependent on climatic conditions. The agrarian structure of Romania does not favor investment in irrigation systems, ensuring safe and stable productions.

The influence of climatic conditions explains the variations in the cereal yield during the 2007–2017 period in Romania and Hungary. Figure 1 shows the significant differences in grain yields in the analyzed countries—differences that remained almost unchanged throughout the analysis interval.

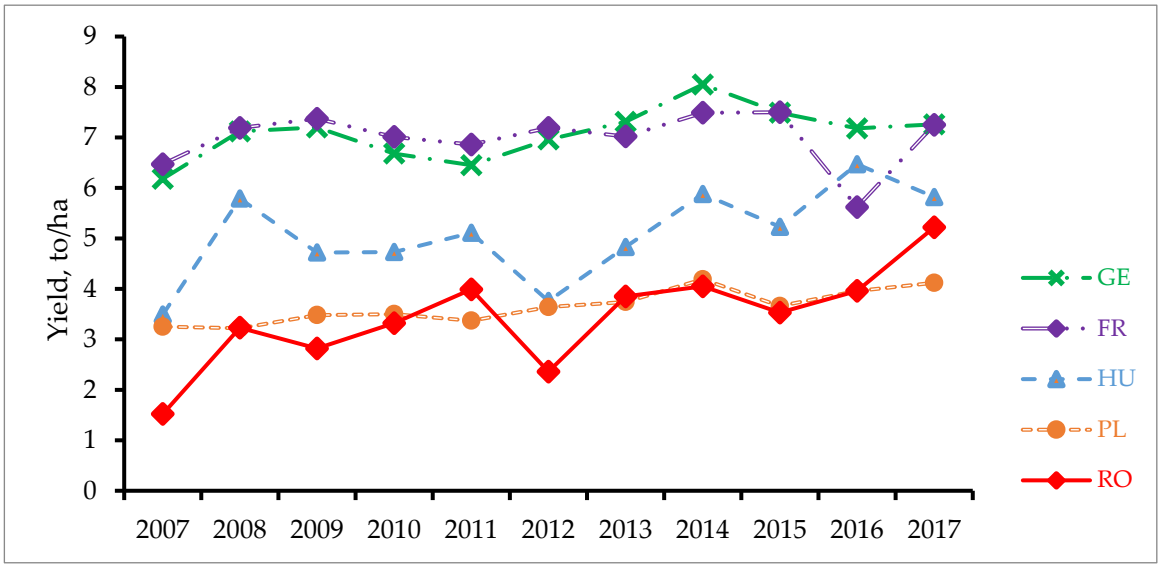

Figure 1. Cereal yield, 2007–2017. Source: Eurostat; Crop products: areas and productions [38].

Ensuring the sustainable management of natural resources is a strategic objective that is necessary in order to achieve the sustainable development of agriculture. Quality of life and the future of new generations depend on achieving this goal. Land grabbing is a driver of environmental change [40]. Through promoting agriculture practices, this phenomenon affects air, soil and water quality, as well as the safety of ecosystems. An analysis based on agri-environmental indicators (Table 5) highlights substantial environmental disparities between Romania and the other countries analyzed.

Table 5. Environment disparities.

Indicators	GE	FR	HU	PL	RO	EU-28
Agricultural areas under Natura 2000, % of agricultural area, for the year 2016	10.2	7.1	11.9	11.4	11.1	9.3
Area under organic farming, % of UAA, for the year 2018	7.34	7.01	3.92	3.33	2.43	7.50
Water quality: Nitrate pollution (mg NO3/l, for the year 2013	622	1656	N.a.	112	659	N.a.
Estimated soil erosion by water: area affected by severe erosion rate, %, for the year 2016	1.3	3.27	2.51	1.14	7.31	5.25
Climate change: Greenhouse gas (GHG) emissions from agriculture, share of agriculture in emissions of GHG, %, for the year 2017	7.1	15.8	10.9	7.6	13.8	16.8
Irrigation: share of irrigable and flooded areas in a utilized agricultural area, % of UAA	4.0	9.7	4.9	1.9	2.7	N.a.

Source: Eurostat, agri-environmental indicators, [41].

The natural environment in Romania is "characterized by good preservation of natural resources of soil and water, variety of traditional landscapes and a remarkable biological diversity" [42]. The challenges of agriculture development and other economic branches can seriously affect the quality of the environment as a result of climate change, deterioration of natural balance, degradation and depletion of resources. Biodiversity is threatened by land grabbing due to the replacement of traditional agricultural practices based on existing technologies, with intensive technologies that lead to changes in the countryside and threaten the diversity of accompanying fauna and flora. Land grabbing contributes to the transformation of local farming environments through monocultures that are needed to cover the demand for biofuels, which affects ecosystems. To address this challenge, the European Union created the Natura 2000 instrument, which comprises a network of natural or semi-natural areas, so-called SCIs (Sites of Community Interest) and SPAs (Special Protection Areas), because vulnerable plant and animal species and natural habitats must be protected. This tool was based on the 1979 (amended in 2009) Birds Directive [43] and the 1992 Habitats Directive [44]. Romanian agricultural areas under Natura 2000 are in a proportion similar to the other countries analyzed.

Water is one of the critical resources necessary for the sustainable development of agriculture worldwide, and irrigation is an objective necessity [45]. Irrigation can provide the water necessary for plants to obtain optimum yields, high-quality harvested crops and sustainable agricultural production.

Of course, irrigable and irrigated agricultural areas vary significantly among countries. Romania poses a significant risk to climate change, which is reflected in changes in the temperature and rainfall regime over the past 40 years. An essential part of Romania's agricultural area is currently experiencing the harmful effects of drought, insufficient water supply and insufficient and poorly functioning irrigation facilities.

The irrigation system in Romania was built before 1990 and covered about 22% of Romania's arable surface, but was later left in ruins. Currently, more than 75% of irrigation facilities are not functional, and functional ones are inefficient in terms of water and energy consumption, resulting in high expenses for farmers [46]. We note that the share of irrigable and irrigated areas in utilized agricultural land is lower in Romania compared to most of the countries analyzed in this study. Land grabbing may constitute a significant obstacle to the expansion of irrigation systems because it involves substantial investments that farmers are often unwilling to make.

Organic agricultural development constitutes a priority for the Common Agricultural Policy, and represents an opportunity for Romanian agriculture [47]. In vast areas, organic farming involves traditional practices that are incompatible with extensive techniques. Land grabbing adversely affects the development of organic farming and is one of the leading reasons why the share of the agricultural

area under organic farming is lower in Romania than in the other countries analyzed, and well below the EU-28 average.

Ensuring that the necessary quantity and quality of water resources are available is essential to living conditions in general and for carrying out human activities. The role of water in environmental systems through economic and social activities shows that it is an indispensable resource in the lives of living people and organisms. Water resource management involves ensuring water of a sufficient quality in the necessary quantity.

Increasing demand for food is associated with increasing the pressure on freshwater resources. About 86% of freshwater resources support agricultural activities. The implications of land grabbing on water resources have previously been recognized [48]. Large-scale irrigation causes water stress and poor water quality. Intensive agricultural technologies have been responsible for the pollution of surface waters and groundwaters (through fertilizers, pesticides, nitrates and nitrites). In Romania, water resources remain of a relatively good quality, but nitrate pollution is higher than in Poland or Hungary (although it is lower than in France).

Soil erosion by water is one of the big problems contributing to soil degradation in Romania. This issue affects 7.31% of agricultural land, which is above the EU-28 average and higher than in all of the other countries analyzed. This phenomenon reduces farm viability, destroys vegetation and landscape architecture and affects water quality. The increased risk of erosion is due to many lands being abandoned in winter, and the frequent performance of short agrotechnical works. Forest grabbing in Romania [49] also contributes to soil erosion by water through the abusive logging of forests.

Global climate change affects genuinely sustainable development through negative consequences toward the environment, economic activities and (implicitly) quality of life. Among the factors influencing climate change in recent decades has been the increase in greenhouse gas (GHG) emissions. Agricultural production and implicit food security are deeply affected by climate change. At the same time, intensive agricultural practices contribute to the growth of greenhouse gas emissions such as methane (CH4), nitrous oxide emissions (N2O) and carbon dioxide (CO2). Land grabbing fosters climate change [50,51] by affecting ecosystems and increasing greenhouse gas emissions as a result of land-use change (deforestation for the expansion of arable land), large livestock farms and the widespread use of organic and inorganic fertilizers. In Romania, the share of agriculture contributing to emissions of greenhouse gases is below the EU-28 average, but higher than in most of the other countries analyzed except for France.

4.5. Recommendations Against land Grabbing

The development of agriculture in Romania will require the adoption of a set of measures to eliminate the factors that generate the current disparities with the EU, and that will create premises for the development of sustainable agriculture. Of course, it is necessary to reduce the excessive fragmentation of the land, which is still maintained, but also to avoid excessive concentration via land grabbing.

In order to reduce land grabbing, we consider it necessary that these measures be in line with national and international agricultural policies, mainly the CAP, which can be converted into appropriate legal regulations and concrete actions by the government and local decision-makers. The principles of the new agrarian governance must guarantee property rights.

The single-dimensional approach of the formalization of property rights is not enough, because it does not consider the power imbalances between the actors involved and cannot be applied in all systems of traditional agricultural production [52]. A real guarantee of land ownership rights requires a multidimensional approach. The documents adopted by the European institutions [53,54] propose several measures to regulate the agricultural land market in order to prevent land grabbing and land concentration.

A reform is need of the CAP, which has favored an increase in agricultural holding sizes through the Single Payment Scheme (now becoming the Basic Payment Scheme). In this respect,

the following measures may be adopted: the introduction of direct payment ceilings; the use of redistributive payments that favor small farmers; coupled payments, to strengthen sectors in difficulty; the implementation of new greening policies; and an increase support for young farmers and small farmers.

Land is not a "commodity" but rather a "finite transnational resource" that must be governed responsibly according to sustainable principles. The use of land for agriculture should be in line with environmental protection, and therefore food production should be prioritized over agri-fuel production.

The free movement of capital is a sovereign principle of the functioning of the market in the EU. However, in the case of land, regulations should be included, including higher limits on the purchase of agricultural land. Local agricultural communities must be involved in significant decisions on land destinations. Local and national authorities must have real information on ownership and land use, and permanently updating the cadaster is a priority.

Land grabbing issues cannot be solved only by European institutions or authorities of the Member States. It is necessary to consciously involve farmers who are associated in viable agricultural structures voluntarily. Agricultural cooperatives are an essential option for increasing the competitiveness of small farmers.

The involvement of civil society is also crucial for stopping the phenomenon of land grabbing. An example of this is the French citizens' initiative "Terre de Liens", which supports family farming, local food and agricultural production [12].

The realization of a complete agreement between the structure of land ownership, the use of the earth and the sustainable development of agriculture constitutes a current model for good land governance.

5. Conclusions

The agrarian structure characterized by the number and size of agricultural holdings has a significant influence on the sustainable development of agricultural holdings. In Romania, the agrarian structure is the result of economic policies implemented after 1989 that led to the excessive fragmentation of the land and favored the manifestation of the phenomenon of land grabbing.

The results of the present research show that land concentration and land grabbing pose a significant threat to the sustainable development of agricultural holdings and rural areas due to their adverse social effects, and their cultural and environmental impact. At the same time, excessive land fragmentation is undesirable because it goes against the principles of economic rationality. These considerations demonstrate the need to adopt adequate policies in order to realize a land ownership structure that enables the practice of sustainable, multifunctional and competitive agriculture in which family farms play an essential role.

In Romania, agricultural land is not always purchased for agricultural purposes. The increase in the price of agricultural land has led to speculation, which has benefited those with financial resources. The subsidies granted by the EU, represented by direct payments calculated per land area, have also led to an increased interest in agricultural lands. In Romania, legislation on land acquisition is more permissive than in other EU countries.

Land grabbing occurs at different intensities in each EU country. In Romania, the phenomenon has reached alarming proportions, and this—along with the excessive fragmentation of the land—has led to poor agricultural performance compared to other EU-28 countries. The technical and financial capital used in Romania's agriculture is lower than in other countries and, consequently, the yields obtained in crop and livestock production are also lower. One reason why organic farming, which is an essential component of sustainable agriculture development, is still poorly represented in Romania is land grabbing, which involves industrial-scale agriculture. The concentration of land in extensive agricultural holdings makes it difficult for the young generation to access agricultural land, and the

ageing of the population employed by Romania's agriculture—although that population remains statistically numerous—threatens the viability of rural communities.

Land regarded not as a commodity, but rather as an essential resource for food security and safety, therefore, is an essential means of existence for today's and tomorrow's generations. In this manner, the policies for proper land use are essential for all countries based on the subsidiarity principle (where a decision, the effort and the responsibility belong to each country). At the same time, the principles on which the EU has been established, require appropriate changes within the CAP.

For Romania, the adoption of appropriate land policies that are able to protect property and limit land grabbing is an urgent national security issue [55], which is why there are concerns about modifying the legislative framework that regulates land sale. However, other economic and social measures accompanying this legislation should guarantee the use of the land based on principles of economic rationality and a high standard of living in rural areas.

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