

Regional Analysis of the Agricultural Sector in Romania (2008–2024)

Nela Șteliac*

ARTICLE INFO	ABSTRACT
<p><i>Article history:</i> Received: March 16, 2026 Accepted: March 29, 2026 Published: March 31, 2026</p> <p><i>JEL Classification:</i> Q10, J21, J31, O13, O18</p> <p><i>Keywords:</i> agriculture, regional analysis, variability indicators, regional disparities</p>	<p>This paper presents a regional analysis of the Romanian agricultural sector for the period 2008–2024 based on statistical data published by the National Institute of Statistics. To this end, we analyzed five indicators: the number of active enterprises, the employed civilian population, gross value added, gross value added per employed person, and the average monthly net wage. To identify regional disparities, we calculated variability indicators. The data and calculations revealed regional disparities: small throughout the entire period for the number of enterprises; large throughout the entire analyzed period for the employed population; large for most of the analyzed time period in terms of gross value added; small and large in certain years regarding gross value added per employed person; very small and small regarding the average monthly net wage. Compared to the first year of the analyzed period, regional disparities: increased for the employed population and for gross value added per employed person; decreased for gross value added and for the average monthly net wage; remained relatively constant for the number of active enterprises.</p>

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1. Introduction

Given the functions it performs, agriculture has been and remains an essential economic sector of any national economy (Ionitescu, 2023). It provides both consumer goods for the population and raw materials for other sectors (Mihalciuc, 2020a), which is why it continues to be a focus of attention for specialists. At the same time, agriculture plays an important role in the economic development of countries or regions (Mihalciuc, 2020b; Gazuda et al., 2024; Luan et al., 2024), representing the main economic activity carried out in rural areas that absorbs a large portion of the labor force.

In analyzing the agricultural sector, it is also important to consider regional aspects that can provide a clearer picture of the territorial distribution of activities that are not captured by an analysis conducted solely at the national level. Thus, regional analysis helps identify territorial disparities as well as regions with higher or lower performance, and establishes public policies appropriate for each region and conducive to the efficient allocation of resources. Consequently, this analysis can provide the information necessary for strategic planning, monitoring national convergence, evaluating the impact of agricultural policies on each individual region, and prioritizing agricultural and rural development policy interventions.

* Babeș-Bolyai University of Cluj-Napoca, Romania. E-mail address: nela.steliac@econ.ubbcluj.ro (N. Șteliac).

A regional analysis is also necessary when evaluating the results of the use of Common Agricultural Policy instruments at the European Union level (Esposti & Sotte, 2013; Manevska-Tasevska, 2021) as well as their influence on the convergence or divergence of agricultural development across regions. Without a regional approach, strategic planning for investments, financial support, and rural development programs remains incomplete, perpetuating inequalities and the underutilization of economic opportunities at the territorial level.

This paper focuses on a regional analysis of the agricultural sector through the lens of five indicators: number of active enterprises, employed civilian population, gross value added, gross value added per employed person, and average monthly net wage. The analysis covered the period 2008–2024, using statistical data published by the National Institute of Statistics (INS). The aim of the study was to identify and analyze the dynamics of territorial disparities.

Unlike other studies, this research adds value through a dynamic analysis of these regional disparities using variability indicators.

2. Literature review

In both domestic and foreign academic literature, most studies focus on the agricultural sector at the national level. However, there are a number of works that also analyze regional aspects, highlighting its territorial variations and specificities. Below, we will present just a few of these.

Thus, Bălan (2015) analyzed the development of agriculture in Romania from a regional perspective, aiming to identify disparities among macro-regions. The study focused on a quantitative approach to assess the level of agricultural development and the sector's impact on the rural economy. The research revealed the modest economic efficiency of available resources. By highlighting regional differences, the author emphasized the need for coherent public policies and interventions by central authorities aimed at supporting balanced agricultural development at the national level.

Avrămescu & Ungureanu (2009) focused their scientific study on a single region, South Muntenia. The authors analyzed the evolution of the agricultural sector in this region, highlighting its contribution to regional GDP, the main crops and livestock, as well as the region's development trends and prospects.

The same region was also studied by Soare & Chiurciu (2020), who examined cultivated area, total and average yield per hectare, as well as average price, highlighting the importance of favorable conditions for wheat cultivation.

Unlike the authors mentioned above, Mihalciuc (2020a) analyzed all development regions in Romania from the perspective of the agricultural sector's contribution to regional GDP and highlighted the importance of agriculture in the national economy, examining both its historical evolution and its current role.

Mateoc-Sîrb et al. (2022) analyzed at the regional level the value share of agricultural production as well as the production of the main crops in which Romania holds significant positions in the European Union rankings (wheat, sunflower, corn, rapeseed, soybeans).

Based on agriculture's contribution to regional development, Popescu et al. (2024) ranked Romania's regions according to their economic and agricultural performance and highlighted the existence of significant regional disparities.

The study by Ivascu & Danuletiu (2021) tracked the evolution of the Romanian agricultural sector between 2008 and 2020, highlighting certain regional disparities. The authors highlighted the existence of an inverse relationship, at the regional level, between labor productivity and the share of the population employed in agriculture, as well as the efforts of Romanian agriculture to align with European Union trends, alongside challenges related to productivity, digitization, and profitability.

Building on the connections and interdependencies between agriculture and other economic sectors, Loizou et al. (2019) brought to the attention of experts the issue of this sector's contribution to the integrated development of the regional rural economy. The study examined not only agriculture's contribution to the regional economy but also the effects of the Common Agricultural Policy (CAP) reform on local economic performance. The results showed that the CAP's impact extends beyond the agricultural sector, influencing other sectors, total output, employment levels, and household incomes. The main conclusion of the study was that agriculture is a key driver of regional growth, generating significant increases in output with multiplier effects on non-agricultural economic activities.

Other researchers have examined regional disparities on a scale that goes beyond the national level. For example, Li et al. (2022) investigated global and regional disparities in agricultural sector development, using the indicator of relative per capita agricultural income for each country studied. The research highlighted significant divergences between the Global South and the Global North, showing that the main determinant of global agricultural income disparity is the low productivity of countries in the Global South. The researchers emphasized the need to provide financial and fiscal support to these countries, as well as the role of countries in the Global North in reducing regional gaps. They emphasized that public investment, education, rural infrastructure development, and institutional reform are essential for increasing agricultural productivity. Furthermore, the technological advantages of Europe, Central Asia, and North America were highlighted, and it was recommended that these regions engage in supporting areas with lower productivity, particularly in East Asia and the Pacific.

Other scholarly works address economic and environmental aspects of the agricultural sector. For instance, Rodriguez-Fernandez et al. (2025) analyze the eco-efficiency of Spanish agriculture, incorporating both environmental and economic variables to guide decision-making in line with European environmental policies. The authors assess the eco-efficiency of the Spanish agricultural sector across different regions and production systems during the period 2004–2022. Their research highlights significant regional differences in eco-efficiency, with nearly half of the regions ranking above the national average. The analysis demonstrates that it is possible to optimize resource allocation and reduce greenhouse gas emissions at the national and regional levels, thereby supporting the development of regionally tailored strategies within the Common Agricultural Policy to promote agricultural sustainability.

Without claiming to have presented them all, we have attempted to highlight some of the specialized studies that have addressed the regional aspects of the agricultural sector.

3. Methodology

In order to identify potential regional disparities, we calculated variability indicators (mean, variance, coefficient of variation), disparity indices, and the Herfindahl–Hirschman Index.

These were determined as follows:

- ✦ the mean: as the arithmetic mean;
- ✦ the standard deviation: according to the following formula:

$$\sigma = \sqrt{\frac{\sum_{i=1}^n (x_i - \bar{x})^2}{n}}$$

where x_i = the value of the indicator for region "i"

\bar{x} = the mean of the indicator

n = number of regions;

- ✦ the coefficient of variation: as the ratio between the standard deviation and the mean;
- ✦ the disparity index: as the percentage ratio between a region's indicator value and the average value of the indicator;
- ✦ the Herfindahl–Hirschman Index (HHI): as the sum of the squares of the regional shares of a given indicator, as shown in the formula below.

$$\text{HHI} = \sum_{i=1}^n p_i^2$$

where: $p_i = \frac{x_i}{X}$ = the share of region "i" in the total agricultural sector

x_i = the indicator from the agricultural sector in region "i"

X = the indicator from the agricultural sector at the national level.

We also determined regional shares for some of the indicators.

The indicators selected for the analysis were as follows: number of active enterprises, employed civilian population, gross value added, gross value added per employed person, and average monthly net wage.

The period analyzed was 2008–2024. At the time of the analysis, data for 2025 were not yet available. The analysis period was selected to highlight the evolution of the indicators across two sub-periods of major economic significance: the economic and financial crisis that began in 2008 and the period immediately following the onset of the COVID-19 pandemic.

The lack of data for 2024, for certain indicators presented in this paper, is due to the fact that such data had not yet been published at the time of the analysis.

4. Results and Discussion

a) Number of active businesses

Over time, the number of agricultural holdings has steadily declined, from 4.48 million in 2002 to just over 2.887 million in 2020 (Ianoşel et al., 2025). According to Eurostat data, the structure of agricultural holdings in Romania in 2020 was characterized by a marked predominance of small-scale units. From this perspective, 2,704,180 farms (93.7% of the total) fell into the category with a standard output below 8,000 euros, while only 182,880 farms exceeded this threshold.

In contrast, the number of active agricultural enterprises was considerably lower. While the number of farms exceeded 2.887 million, according to NIS data, in 2020 only 19,995 active agricultural enterprises were registered - a number approximately 144 times smaller.

Table 1. Number of Active Enterprises in Agriculture, Romania (2008-2024)

Years	Agriculture - total		By regions							
	Number	% of the economy	NV	C	NE	SE	S	BI	SV	V
2008	13,602 (100%)	2.45%	1,718 (12.6%)	1,730 (12.7%)	1,839 (13.5%)	2,348 (17.3%)	2,369 (17.4%)	800 (5.9%)	1,033 (7.6%)	1,765 (13.0%)
2009	15,112 (100%)	2.79%	1,927 (12.8%)	1,949 (12.9%)	2,056 (13.6%)	2,672 (17.7%)	2,600 (17.2%)	821 (5.4%)	1,185 (7.8%)	1,902 (12.6%)
2010	15,240 (100%)	3.10%	1,898 (12.5%)	1,922 (12.6%)	2,022 (13.3%)	2,745 (18.0%)	2,732 (17.9%)	848 (5.6%)	1,205 (7.9%)	1,868 (12.3%)
2011	15,152 (100%)	3.35%	1,862 (12.3%)	1,890 (12.5%)	2,004 (13.2%)	2,778 (18.3%)	2,744 (18.1%)	838 (5.5%)	1,190 (7.9%)	1,846 (12.2%)
2012	16,080 (100%)	3.41%	1,994 (12.4%)	2,018 (12.5%)	2,099 (13.1%)	2,922 (18.2%)	2,867 (17.8%)	910 (5.7%)	1,313 (8.2%)	1,957 (12.2%)
2013	16,758 (100%)	3.45%	2,142 (12.8%)	2,085 (12.4%)	2,149 (12.8%)	3,059 (18.3%)	2,972 (17.7%)	937 (5.6%)	1,387 (8.3)	2,027 (12.1%)
2014	17,471 (100%)	3.44%	2,273 (13.0%)	2,181 (12.5%)	2,275 (13.0%)	3,142 (18.0%)	3,059 (17.5%)	988 (5.7%)	1,433 (8.2%)	2,120 (12.1%)
2015	18,396 (100%)	3.58%	2,477 (13.5%)	2,274 (12.4%)	2,412 (13.1%)	3,347 (18.2%)	3,170 (17.2%)	1,082 (5.9%)	1,455 (7.9%)	2,179 (11.8%)
2016	19,139 (100%)	3.63%	2,649 (13.8%)	2,332 (12.2%)	2,493 (13.0%)	3,484 (18.2%)	3,282 (17.1%)	1,115 (5.8%)	1,554 (8.1%)	2,230 (11.7%)
2017	19,916 (100%)	3.60%	2,877 (14.4%)	2,375 (11.9%)	2,593 (13.0%)	3,598 (18.1%)	3,406 (17.1%)	1,105 (5.5%)	1,663 (8.4%)	2,299 (11.5%)
2018	20,514 (100%)	3.56%	3,000 (14.6%)	2,454 (12.0%)	2,606 (12.7%)	3,696 (18.0%)	3,493 (17.0%)	1,133 (5.5%)	1,723 (8.4%)	2,409 (11.7%)
2019	19,680 (100%)	3.33%	2,814 (14.3%)	2,356 (12.0%)	2,521 (12.8%)	3,561 (18.1%)	3,382 (17.2%)	1,056 (5.4%)	1,683 (8.6%)	2,307 (11.7%)
2020	19,995 (100%)	3.20%	2,895 (14.5%)	2,400 (12.0%)	2,629 (13.1%)	3,537 (17.7%)	3,403 (17.0%)	1,075 (5.4%)	1,739 (8.7%)	2,314 (11.6%)
2021	20,580 (100%)	3.15%	2,970 (14.4%)	2,458 (11.9%)	2,759 (13.4%)	3,682 (17.9%)	3,556 (17.3%)	1,050 (5.1%)	1,752 (8.5%)	2,353 (11.4%)
2022	20,706 (100%)	3.08%	2,976 (14.4%)	2,515 (12.1%)	2,782 (13.4%)	3,670 (17.7%)	3,601 (17.4%)	1,040 (5.0%)	1,811 (8.7%)	2,311 (11.2%)
2023	21,552 (100%)	3.04%	3,090 (14.3%)	2,613 (12.1%)	2,994 (13.9%)	3,758 (17.4%)	3,708 (17.2%)	1,067 (5.0%)	1,878 (8.7%)	2,444 (11.3%)
2024	21,437 (100%)	2.96%	3,137 (14.6%)	2,586 (12.1%)	3,048 (14.2%)	3,647 (17.0%)	3,659 (17.1%)	1,043 (4.9%)	1,900 (8.9%)	2,417 (11.3%)

Note: NV: North-West; C: Center; NE: North-East; SE: South-East; S: South-Muntenia; BI: Bucharest–Ilfov; SV: South-West Oltenia; V: West.

Source: compiled by the author based on INS data (2008-2024)

An analysis of the data in Table 1 shows that, at the national level, there was a relatively steady upward trend, such that by 2024, the number of agricultural enterprises was 7,835 higher than the level recorded in 2008. The largest annual increase, however, occurred in 2009, with 1,510 agricultural units. This trend was influenced by a series of economic and structural factors specific to the agricultural sector at that time, namely: job losses in other sectors (construction, trade, manufacturing) as a result of the economic-, which led to the reorientation of part of the workforce toward agriculture; access to European funds through the Common Agricultural Policy, which encouraged the official registration of

farms to obtain subsidies (Ivascu & Danuletiu, 2021); the trend toward formalizing agricultural activities as a result of stricter requirements regarding access to financing and markets (Ianoşel et al., 2025); a relatively higher degree of economic stability in agriculture compared to other sectors, as it was less affected by the crisis (Borza, 2015). In fact, the orientation of agriculture toward self-consumption and local markets has contributed significantly to maintaining this stability.

Furthermore, in 2020 and 2021, there were again significant increases in the number of active businesses, with 315 entities in 2020 and 585 in 2021, compared to the previous year. These increases followed a year of significant decline (by 834 in 2019 compared to 2018), as agriculture was less affected by COVID-19 pandemic restrictions.

The share of agricultural enterprises in the total economy remained insignificant, ranging from a low of 2.45% in 2008 to a high of 3.63% in 2016. It showed a gradual increase until 2016, followed by a steady decline in subsequent years.

According to Table 1, 2008 saw the lowest number of active enterprises in the agricultural sector, both nationally and regionally. In contrast, the highest values for this indicator were recorded in the last two years of the period analyzed. Thus, in 2023, the highest number of active enterprises was reached both for the sector as a whole and in the Central, Southeast, South-Oltenia, and West regions. In the other regions, with the exception of Bucharest-Ilfov, the highest number of active enterprises was reported in 2024.

The distribution of active enterprises across the country highlights two main regional hubs: the Southeast region (with shares ranging from 17.1% to 18.3%) and the Bucharest-Ilfov region (with shares ranging from 4.9% to 5.9%). In fact, the Bucharest-Ilfov region was followed by the South-West Oltenia region, which recorded the next lowest values (with shares ranging from 7.6% to 8.9%). According to our calculations, the Herfindahl–Hirschman Index was low and stable, fluctuating between 0.137 and 0.139, indicating moderate regional concentration and a relatively balanced distribution of firms across regions.

However, a proper comparative analysis of this first indicator at the regional level requires adjusting the values presented in Table 1 to account for the population of each region. This adjustment makes the indicator more meaningful, allowing for a consistent comparison of values across territories of different sizes. Accordingly, the results of these calculations are presented in Table 2.

Table 2. Number of Active Enterprises per 1,000,000 Inhabitants, Agriculture (2008-2024)

Years	National level	By regions							
		NV	C	NE	SE	S	BI	SV	V
2008-2011	:	:	:	:	:	:	:	:	:
2012	800	767	855	637	1,151	916	399	635	1,071
2013	837	825	884	655	1,212	956	411	677	1,111
2014	876	877	926	695	1,252	991	433	705	1,166
2015	926	958	967	737	1,343	1,035	474	722	1,202
2016	969	1,028	996	765	1,411	1,083	487	780	1,237
2017	1,014	1,120	1,018	800	1,470	1,134	483	843	1,283
2018	1,050	1,172	1,055	809	1,525	1,178	492	884	1,350
2019	1,013	1,102	1,016	787	1,485	1,154	456	873	1,298
2020	1,033	1,136	1,038	823	1,485	1,172	462	910	1,305
2021	1,070	1,170	1,067	870	1,562	1,239	450	926	1,337

Years	National level	By regions							
		NV	C	NE	SE	S	BI	SV	V
2022	1,087	1,179	1,106	863	1,554	1,261	458	969	1,384
2023	1,131	1,220	1,146	929	1,597	1,305	466	1,009	1,462
2024	1,124	1,235	1,130	945	1,555	1,291	452	1,024	1,445

Note: “.” indicates missing regional population statistical data.

Source: own calculations based on INS data (2008-2024)

As shown in Figure 1(a), there is generally an upward trend in the average number of active enterprises per 1,000,000 inhabitants at the national level, as well as an increase in dispersion, indicating a tendency for regional discrepancies from the national average to widen. The coefficient of variation, which measures regional convergence, fluctuated over the analyzed period, indicating alternating periods of reduced convergence (when the coefficient increases) with periods of increased divergence (when the coefficient decreases). However, the fluctuation was insignificant. The minimum level, 28.1%, was reached in 2016, and the maximum level, 29.5%, in 2019 and 2021. Coefficient of variation values below 30% indicate a low level of regional disparities, reflecting the existence of differences between regions, though not pronounced ones. The stability of the coefficient of variation around 29% throughout the analyzed period, without significant deviations, indicates that small regional disparities have remained relatively constant. For 2020, the first year of the pandemic, a slight decrease in the coefficient of variation is observed, indicating a small increase in regional convergence.

The disparity index in Figure 1(b) shows how each region compares to the national average. According to this index, the regional extremes were the SE region (with the highest number of active enterprises per 1,000,000 inhabitants) and the BI region (with the lowest number).

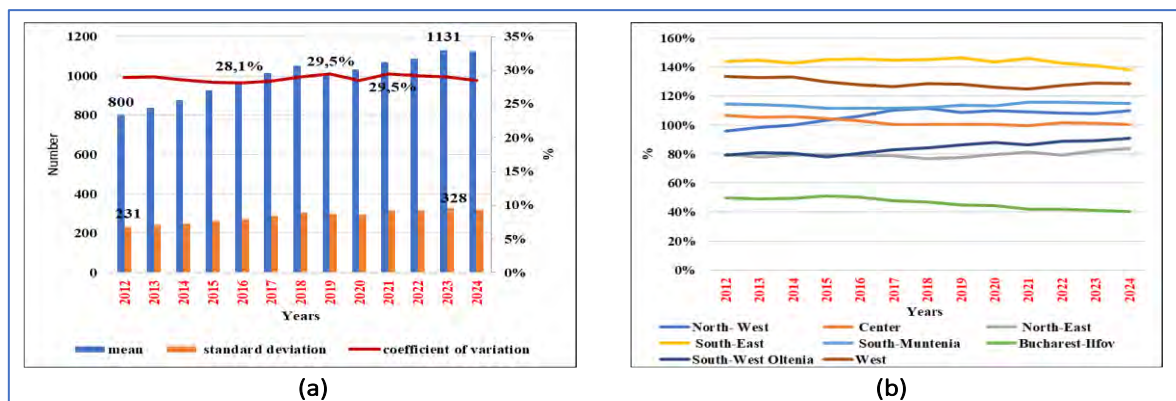


Figure 1. Number of active enterprises per 1,000,000 inhabitants, agriculture – Romania: variability indicators: mean, standard deviation, and coefficient of variation (a); disparity index (b) Source: own calculations based on INS data (2012-2024)

b) The employed civilian population

With regard to the civilian population employed in agriculture, there has generally been a steady decline. The decline was particularly significant in 2015, 2016, and 2021. While in 2008 the number of people employed in agriculture was over 2.4 million, by 2024 it had fallen to over 864,000, representing a significant decline of over 64% - Figure 2(a).

However, between 2008 and 2012, amid the effects of the economic and financial crisis, there was a slight increase in the civilian population employed in agriculture, as a result of the reorientation of those

laid off from various sectors toward agricultural activities. Agriculture functioned as a mechanism for absorbing the labor force, similar to the situation in the 1990s. Those who lost their jobs either turned to production for self-consumption or were registered in the agricultural sector (Aceleanu et al., 2015).

By status, as shown in Figure 2(b), with the exception of the 2009–2014 period, the largest share of the employed civilian population was held, in order, by self-employed workers (with percentages ranging from 43.08% in 2011 and 52.56% in 2021) and unpaid family workers (with values ranging from a minimum of 31.23% in 2021 to a maximum of 52.85% in 2011). The combined share of these two categories was significant, ranging from a high of 95.92% (2011) to a low of 83.015% (2024), though it showed a downward trend over the entire period analyzed.

The changes that occurred in 2024 compared to 2008, broken down by employment status, were significant. Thus, the number of employees and employers increased by over 30% and 205.9%, respectively, while the number of self-employed workers and unpaid family members decreased by 64.4% and 73.6%, respectively. Some experts attribute this decline to the excessively low levels of agricultural income, rural population migration, and the aging of the population (Ursu, Sterie & Petre, 2023). The increase in the share of wage earners in agriculture, together with the decline in unpaid family workers, reflects a process of modernization and professionalization in the Romanian agricultural sector. This trend is closely linked to the increase in the number of active agricultural enterprises, which require employees with formal employment contracts to ensure efficient production and resource utilization. In practice, there has been a shift from subsistence agriculture, based on family labor, toward organized, market-oriented commercial farms capable of accessing subsidies, markets, and modern technology, thereby increasing the sector’s productivity and efficiency.

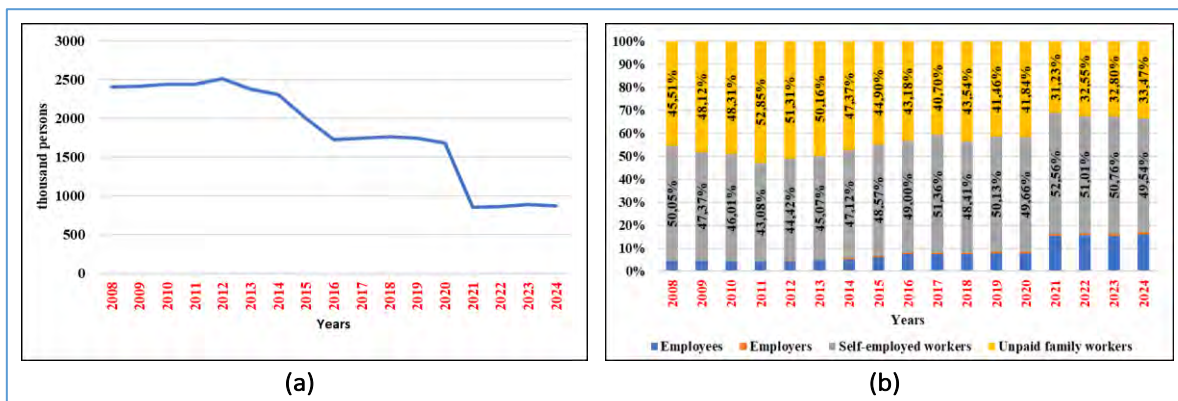


Figure 2. Civilian population employed in agriculture, Romania (2008–2024): total (a); by professional status (%) - (b)

Source: compiled by the author based on INS data (2008-2024)

The share of people employed in agriculture has fluctuated over time. Our calculations show that, at the national level, this figure stood at 27.5% in 2008 and rose gradually to 29.3% in 2012. Subsequently, however, the share began to decline steadily, reaching 11.2% in 2024.

There were significant differences between the share of the civilian population employed in agriculture in each region compared to the national average, as well as between regional hubs. The highest share was recorded in the Northeast region, with values ranging from a low of 16.9% (2022) to a high of 41.5%

(2010–2012). At the opposite end of the spectrum was the Bucharest-Ilfov region, where the share of the population employed in agriculture ranged from 1% (2021 and 2022) to 3.1% (2012).

The calculated variability indicators show that, over the period analyzed, the average of the indicator decreased, and the absolute dispersion among regions narrowed, indicating a slight homogenization in absolute terms. However, the coefficient of variation increased, from 39.5% in 2008 to 42% in 2024, signaling a rise in relative differences and the existence of significant regional disparities. The Herfindahl–Hirschman Index remained low and relatively constant (between 0.149 and 0.1463), indicating that these disparities were not concentrated in a single region but were distributed relatively evenly across all analyzed regions - Figure 3(b).

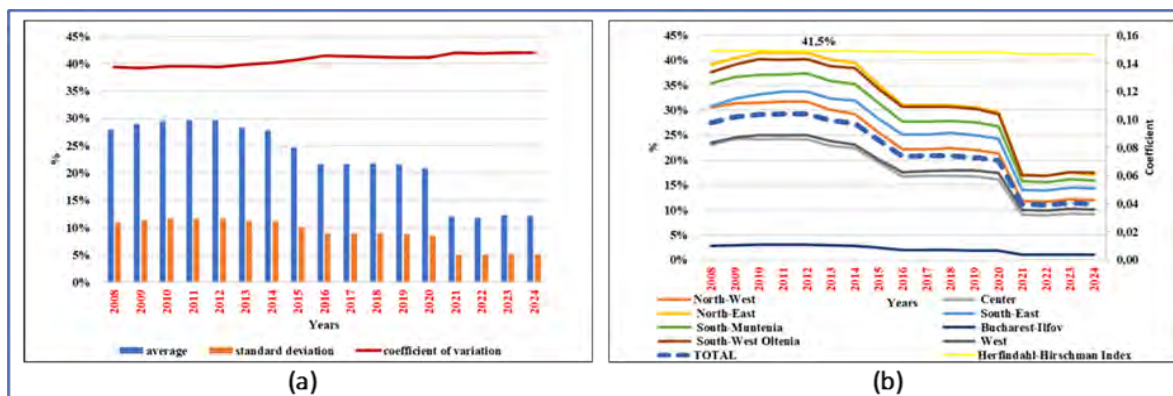


Figure 3. Share of the civilian population employed in agriculture: variability indicators (a); in the total civilian employed population, by regions and Herfindahl–Hirschman Index (b)

Source: compiled by the author based on INS data (2008-2024)

c) Gross value added (GVA)

When considering gross value added at current prices, it fluctuated from 34,019.8 million lei in 2008 to 52,879.2 million lei in 2023. However, the overall trend has been upward, suggesting a favorable evolution of this indicator - Figure 4(a) and Figure 5(a). When we look at the period of the economic and financial crisis and the COVID-19 pandemic, we see that the level of this indicator has suffered.

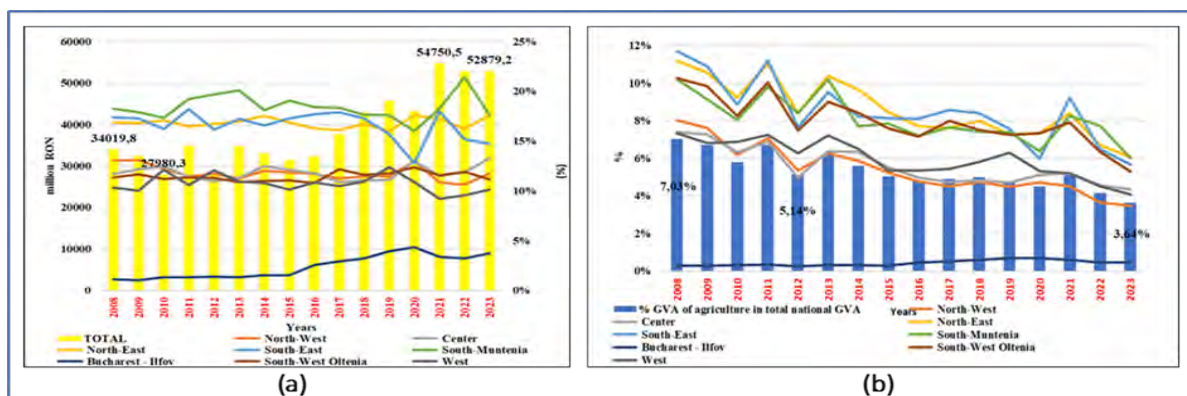


Figure 4. GVA at current prices, total agriculture (million RON) and by regions (%) (a); contribution of agricultural GVA to total national GVA and total regional GVA (%) – (b)

Source: compiled by the author based on INS data (2008-2023)

Agriculture’s contribution to total national GVA has varied from year to year. Its largest contribution was in 2008, at just over 7%, while its smallest contribution was in 2023, at 3.64%. Although, according to Figure 4(b), the trend was downward, this contribution was nevertheless fluctuating. However, when considering agriculture’s contribution to regional GVA, the differences between the two regional hubs are significant. As expected, the Bucharest-Ilofov region recorded the lowest contribution of this sector to regional GVA, with a share ranging between 0.3% and 0.7%. For the top position, the competition was between three regions: the Southeast region (2008, 2009, 2011, 2016–2019, and 2021), the Northeast region (2010, 2012–2015, 2020, and 2023), and the South Muntenia region (2022) - see Figure 4(b).

With regard to GVA dispersion, fluctuations were observed, reflecting variations in regional disparities during the period under review. As such, differences between regions did not follow a uniform trend, but rather alternated between periods of widening and narrowing. This alternation between periods of increasing and decreasing regional convergence is highlighted by the coefficient of variation. It indicates a lower degree of territorial homogeneity for this indicator compared to the others analyzed. Thus, in 2008, 2009, 2011-2013, and 2015, the coefficient of variation exceeded 40%. In 2013, the coefficient reached a peak of 43.2% (the highest level of disparities among territorial units), and in 2020, a low of 29.3% (the lowest level of regional disparities). However, there is a more pronounced downward trend by 2020 compared to 2008, as well as a reduction in relative disparities among the eight regions when comparing 2024 to 2008.



Figure 5. GVA at current prices, agriculture: variability indicators - mean, standard deviation, and coefficient of variation (a); disparity index and Herfindahl-Hirschman Index (b)

Source: compiled by the author based on INS data (2008-2023)

If we look at the disparity index - Figure 5(b) - we can see that, overall, the South Muntenia region ranked first, exceeding the national average by more than 70% (in 2022). In fact, this region recorded the highest GVA in agriculture due to favorable natural conditions, extensive arable land, fertile soils, and economic specialization in agricultural activities. According to the South Muntenia Regional Development Agency (2024), these elements have led to high agricultural production and a significant contribution to gross value added. This region’s share of total GVA in agriculture is significant, with values ranging from a low of 16% in 2020 to a high of 21.4% in 2022.

At the bottom of the ranking was the Bucharest-Ilfov region, with disparity index values ranging from a low of 8.2% (in 2009) to a high of 34.9% (in 2020), representing, therefore, only 8.2% and 34.9% of the national average, respectively.

Herfindahl-Hirschman Index values ranged from 0.136 to 0.148, indicating a moderate and relatively stable level of regional concentration of GVA. The small fluctuations suggest that the distribution of the agricultural sector's gross value added across regions did not undergo significant changes, although a slight downward trend in concentration was observed toward the end of the period analyzed - Figure 5(b).

d) *Gross value added per employed person*

As for gross value added per person employed in agriculture, it has fluctuated but has generally shown an upward trend. The highest national average was recorded in 2021, at 71,776.5 RON, while the lowest was in 2012, at 11,515.6 RON. The difficult periods in 2009, 2010, and 2020 were reflected in a slight decrease in the average value of the indicator.

In terms of the coefficient of variation, during the 2008-2015 period, the values showed moderate variability (below 25%), indicating a relatively high degree of territorial homogeneity. Starting in 2016, the coefficient of variation rose steadily, reaching a peak of 48.7% in 2020, highlighting a significant increase in regional disparities. Over the next two years, the coefficient of variation fell to 28.3%, only to rise again to 33.8%. Thus, compared to the starting year, a trend toward a reduction in regional disparities is evident in the most recent years analyzed, even though territorial differences remained higher.

The regional hubs for this indicator were not consistent throughout the period analyzed. Thus, although it may seem surprising, the Bucharest-Ilfov region ranked last at the beginning of the period, only to occupy the top position in the ranking starting in 2016, a fact also highlighted by the disparity index presented in Figure 6(b). Between 2010 and 2023, the Northwest region replaced Bucharest-Ilfov in the ranking, recording the lowest values for the indicator. Likewise, the West and Southeast regions also managed to rank at the top of the list (the West region in 2010 and 2012-2014, and the Southeast region in 2011 and 2015).

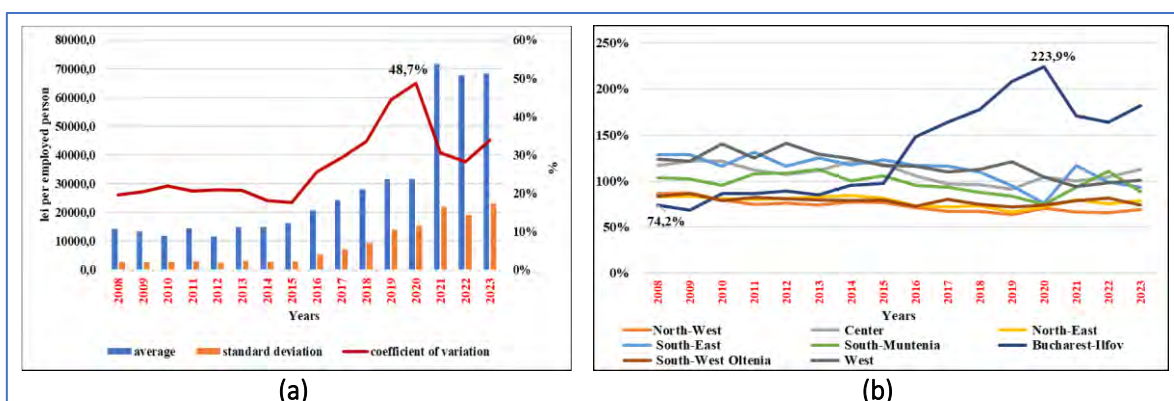


Figure 6. GVA per employed person, agriculture – Romania: variability indicators: mean, standard deviation, and coefficient of variation (a); disparity index (b)

Source: own calculations based on INS data (2008-2023)

e) *Average monthly net salary*

Wages in agriculture have steadily improved. The average net wage has risen consistently year after year, as evidenced by the upward trend in the national average. Statistical data show that wage levels in the agricultural sector were not affected during the years of the economic and financial crisis or during the COVID-19 pandemic.

Although the dispersion fluctuated, it was higher at the end of the period than at the beginning. This indicates a slight increase in regional disparities for this indicator in absolute terms - Figure 7(a).

Similar to the other indicators presented earlier, the average net wage has also experienced periods of both increasing and decreasing regional convergence, as evidenced by fluctuations in the coefficient of variation. It reached a peak of 15.3% in 2013 (the highest level of disparities among territorial units) and a low of 7.4% in 2010 (the lowest level of regional disparities). However, over time, a decline is observed from 12% in 2008 to 7.8% in 2024, which signifies a reduction in relative disparities among the analyzed territorial units. Given the evolution of the coefficient of variation, we can state that regional disparities in terms of average net wages have decreased proportionally, indicating a process of relative convergence among regions, even though the absolute differences in RON have widened. Furthermore, unlike the number of active enterprises in agriculture and gross value added, the coefficient of variation for this indicator was well below 30%, indicating greater regional convergence.

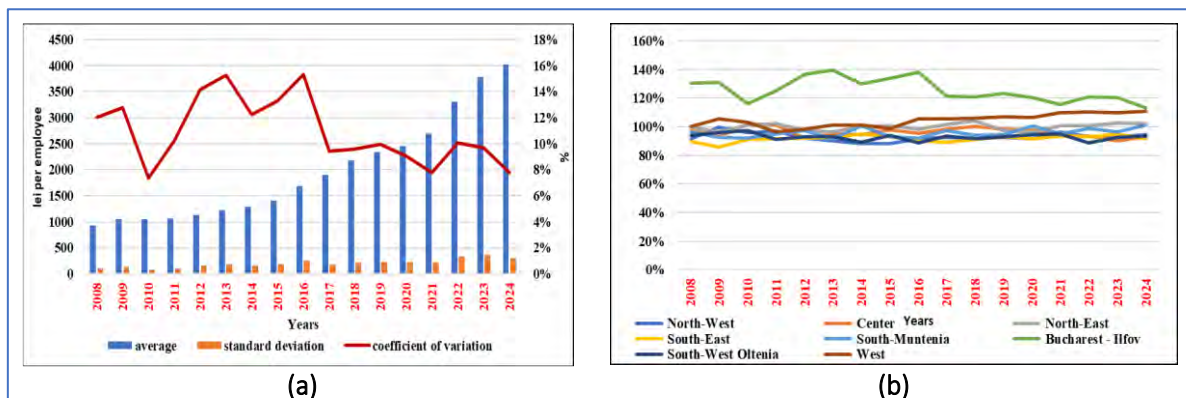


Figure 7. Monthly net average wage, agriculture – Romania: variability indicators: mean, standard deviation, and coefficient of variation (a); disparity index (b)

Source: own calculations based on INS data (2008-2024)

Although the Bucharest-Ilfov region ranked last in terms of the number of active enterprises per 1,000,000 inhabitants, the employed civilian population, and gross value added, it ranked first in terms of the average monthly net wage. This situation is highlighted by the disparity index in Figure 7(b). The average monthly net wage is the highest, despite the fact that the number of agricultural enterprises and the population employed in agriculture are small. However, this must be understood in conjunction with the evolution of gross value added per employed person, which shows a steady convergence toward the regional maximum.

5. Conclusions

The analysis conducted allows us to conclude that there are regional disparities in the Romanian agricultural sector. In relation to the indicators studied, these disparities were high, low, or very low.

In terms of the share of the civilian population employed in agriculture, there were significant regional disparities, with coefficient of variation values exceeding the 35% threshold, indicating that employment is unevenly distributed across the country. Over the entire period, the coefficient of variation fluctuated between 39.2% and 42%. Compared to the beginning of the period, however, by the end of it, the coefficient of variation had risen from 39.4% to 42%, indicating a slight decline in regional convergence and an increase in disparities between regions.

Furthermore, for most of the period studied, the coefficient of variation for GVA exceeded the 35% threshold, indicating large regional disparities and an uneven distribution of agricultural development across regions. However, in 2023, compared to 2008, the coefficient of variation fell from 41.2% to 33.8%. This drop below the 35% threshold signals a slight increase in regional convergence, meaning that disparities between regions have narrowed, with regions becoming more homogeneous. Such a development indicates a positive trend toward regional balance.

With coefficients of variation below 35%, regional disparities in the number of active enterprises were small throughout the entire period analyzed. The values of the coefficients of variation ranged between 28.1% and 29.5%. Compared to 2008, the coefficient decreased slightly in the last year, from 28.9% to 28.5%, indicating that the same low level of regional disparity was maintained.

The evolution of GVA per capita at the regional level showed, for most of the period, low disparities, although in certain intervals the coefficients of variation exceeded 45%, indicating in these cases considerable disparities between regions. Without exceeding the 35% threshold (associated with high variation), in 2023 compared to 2008, the coefficient of variation increased from 19.6% to 33.8%, reflecting a noticeable decline in regional convergence, with regions becoming more unequal.

In terms of the average monthly net wage, unlike the other indicators analyzed, the level of regional disparity was low and very low in certain years. The values of the coefficients of variation fluctuated, with the lowest level recorded at 7.4% in 2010 and the highest at 15.3% in 2013. In 2024, however, compared to 2008, we witnessed a reduction in regional disparities, as evidenced by the decrease in the coefficient from 12% to 7.8%, thus indicating an increase in national convergence.

Of all the indicators analyzed, the highest level of regional convergence was observed in terms of wage levels.

The analysis undertaken presents several limitations. For certain indicators, data for 2024 were unavailable, and data for 2025 are entirely missing, which limits the ability to fully assess regional disparities. Additionally, it was not possible to analyze all indicators specific to the agricultural sector. Therefore, the analysis focused only on the selected indicators, which were considered relevant for the purpose of this study.

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