ANALYSIS OF THE ECONOMIC SIGNIFICANCE OF AGRICULTURE IN THE REPUBLIC OF SERBIA AND THE REPUBLIC OF CROATIA

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ABSTRACT

The aim of the paper is to analyze the economic significance of agriculture in Serbia and Croatia. Bearing in mind the similarities in the characteristics of agricultural production, as well as the economic characteristics of agricultural entities, the authors of the research start from the hypothesis that agriculture has approximately the same economic significance in the current period in both countries. In order to verify the hypothesis, the paper analyzes the relevant macro-economic indicators. For this purpose, the following methods are used: desk research, descriptive statistics, analysis and synthesis, as well as the comparative method. The authors conclude that in recent years the participation of agriculture in the gross domestic product has recorded a downward trend in both countries, as well as the participation of the number of employees in agriculture in the total number of employees. Based on the conducted research, the authors conclude that agriculture has a decreasing economic significance and in Serbia and in Croatia.

Introduction

Rural areas occupy a dominant part of the territory of both the Republic of Serbia and the Republic of Croatia. More precisely, according to the categorization of the Organization for Economic Cooperation and Development (OECD), 79.5% of the territory of the Republic of Serbia (IPARD III 2021-2027) and 63% of the territory of the Republic of Croatia are considered rural areas (EC-2022). In Croatia, 42.5% of the total population lives in rural areas (EC-2022). According to the results of the

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Population Census in Serbia, which was carried out in 2022, 38% of the total population lives in rural areas (RIS-TPS-2022). These two countries were taken as comparative examples considering that, in addition to the fact that rural areas are represented on the majority of the territory in both countries, the structure of agricultural subjects is similar, as well as the average size of their agricultural holdings *(Table 1).*

In the structure of agricultural holdings (AH) in both countries, family agricultural holdings (FAH) predominate. In the year 2023, the share of FAH in the total number of AH was 99.6% in Serbia and 74.6% in Croatia. In Croatia, a 23% decline in the share of FAH within AH was recorded in the year 2023 compared to 2018; however, FAH still maintain a dominant position in the structure of agricultural holdings. In Serbia, the share of FAH in the total number of AH decreased by only 0.1% in the year 2023 compared to 2018. The average agricultural holding size remained approximately the same in both countries in 2018 and 2023. Furthermore, both countries experienced an increase in the average agricultural holding size in 2023 relative to 2018, with a 32% growth in Croatia and a 23% growth in Serbia *(Table 1)*.

Table 1. The number of agricultural holdings and the average holding size in Croatia and Serbia

Indicators	**Croatia**		**Serbia**	
	2018	**2023**	**2018**	**2023**
Number of agricultural holdings (AH)	167,676	164,629	564,541	508,365
Number of family agricultural holdings (FAH)	162,248	122,879	562,896	506,323
The share of family agricultural holdings in the total number of agricultural holdings	96.8%	74.6%	99.7%	99.6%
The average holding size of agricultural entities	5.3 ha	7 ha	5.2 ha	6.4 ha

Source: MAFF-ARSA-2018, MAFF-ARSA-2023, RIS-SYRS-2023, RIS-RCA-2023

A similar situation is observed in both countries regarding the age and educational structure of family agricultural holding (FAH) owners. In the year 2023, owners aged over 65 years had a dominant share in the age structure of FAH owners in both countries. Specifically, they accounted for 51% of the total number of FAH owners in Croatia and 45% in Serbia (MAFF-ARSA-2023, RIS-EAP-2024). Regarding the educational structure of FAH owners, secondary education was the most prevalent level. In the year 2023, 38.9% of FAH owners in Croatia and 38.1% in Serbia had secondary education. It is important to note that this analysis only considers formal education levels of FAH owners and does not account for any forms of non-formal education (MAFF-ARSA-2023, RIS-CA-2023).

Furthermore, the unfavorable age structure of family agricultural holding (FAH) owners, the small size of holdings, and the increasingly pronounced depopulation of rural areas represent significant constraints on agricultural development as well as rural development in both countries (Prudky et al., 2025; Aničić and Paraušić, 2020; Radosavljević et al., 2023). These socio-economic characteristics also present a limiting factor for the development of agricultural production insurance, which remains underdeveloped in both countries (Radović, 2020a; Radović, 2020b). Considering the growing impacts of climate change and its adverse effects on agricultural production, agricultural insurance in the current conditions can be regarded as an essential agrotechnical measure to ensure profitable production and the development of agriculture (Radović, 2024).

The development of agriculture, as the most important activity within the primary sector of the economy, represents the basis for the development of the secondary as well as the tertiary sector, i.e. it significantly affects the overall economic development of a country (Zelenović et al., 2023). Given that, in both countries, the structure of agricultural entities is dominated by small agricultural holdings, which are unable to achieve the necessary levels of productivity, efficiency, and profitability, it is crucial to promote their consolidation in order to enable the development of agriculture. Jeločnik et al. (2023) argue that one of the economically validated methods of consolidation is the establishment of cooperatives, or the development of cooperative farming. By fostering cooperation among small agricultural holdings, these cooperatives can enhance economies of scale, improve market access, and facilitate the implementation of modern agricultural practices, thereby contributing to the overall advancement of agricultural production and rural development.

Agriculture has a significant impact on the development of the entire economy (Grujić-Vučkovski et al., 2022). However, Dimitrijević et al. (2023) observed that this impact has been declining in recent years in Serbia, particularly when considering the share of agriculture in gross domestic product (GDP) as well as its role in employment. It is well known that the development of agriculture depends on numerous factors, among the most important being the level of financial investment and labor productivity. Additionally, the development of agricultural production directly influences the food security of a country (Kovljenić and Raletić-Jotanović, 2021; Jurjević et al., 2022). The relationship between agricultural development and food security highlights the importance of increasing investment in agriculture, improving productivity, and ensuring a stable and sufficient supply of food for the population. Thus, while agriculture's contribution to the economy may be waning in some areas, its role remains central to ensuring national food security and fostering long-term economic stability. Considering the importance of agricultural production in both countries, the objective of this study is to analyze the current economic significance of agriculture in the Republic of Serbia and the Republic of Croatia.

Materials and methods

Considering the similarities in the characteristics of agricultural production, as well as the economic attributes of agricultural entities in both countries, the authors hypothesize that agriculture holds approximately the same economic importance in the current period in both Serbia and Croatia.

To verify this hypothesis, the study analyzes relevant macroeconomic indicators: (a) the share of agriculture in gross domestic product (GDP); (b) the share of agriculture in foreign trade exchange; and (c) the share of agriculture in total employment.

The data sources include official statistical reports from both countries. The research employs several methods, including desk research, descriptive statistics, analysis and synthesis, as well as comparative and descriptive methods. By examining these indicators, the study aimed to provide a comprehensive overview of agriculture's role in the economies of both countries, highlighting its significance not only in economic terms but also in terms of employment and rural development.

Results and Discussions

In order to analyze the characteristics of agricultural production, the structure of utilized agricultural land and the livestock fund in the Republic of Serbia and the Republic of Croatia for the year 2018 and 2023 are presented in tables 2 and 3. In the structure of utilized agricultural land, arable land and gardens dominate in both countries. Meadows and pastures occupy the second position, followed by orchards and vineyards, which cover significantly smaller areas. Based on the tabular presentation, it can be concluded that the structure of utilized agricultural land is similar in Croatia and Serbia, with only slight changes in this structure observed in 2023 compared to 2018 (*Table 2*).

Table 2. The structure of used agricultural land in Croatia and Serbia

Structure of used agricultural land	Croatia		Serbia	
	2018	2023	2018	2023
Arable land and gardens	54.1%	58.3%	73.98%	77.20 %
Meadows and pastures	40.9%	36.2%	19.47%	16.5%
Orchards	2.2%	2.6%	5.26%	5.7%
Vineyards	1.4%	1.3%	0.59%	0.5%
Olive groves	1.3%	1.4%	-	-
Other lands	0.1%	0.2%	0.02%	0.1%
Total:	100.00%	100.00%	100.00%	100.00%

Source: MAFF-ARSA-2018, MAFF-ARSA-2023, RIS-SSAH-2018, RIS-CA-2023

Furthermore, in the structure of livestock fund in Croatia, significant changes were observed between the year 2018 and 2023 (*Table 3*). The production of pigs, sheep, goats, and poultry all experienced notable declines, with reductions of 19%, 13%, 9%, and 6%, respectively. This trend suggests a decrease in the overall scale of animal husbandry in Croatia, possibly due to factors such as market conditions, changing consumer preferences, or economic pressures on small and medium-sized farms. In contrast, the number of cattle saw a slight increase of 0.3%, indicating a modest stability in this sector, while the most significant growth was recorded in the number of beehives, which rose by 24%. This increase in beekeeping could be attributed to rising demand for honey and other bee-related products, as well as potential shifts towards more sustainable agricultural practices.

Similarly, in Serbia, livestock production trends from 2018 to 2023 show a predominance of decline across various sectors (*Table 3*). The number of cattle decreased by 18%, pigs by 31%, sheep by 5%, goats by 32%, and poultry by 7%. These declines reflect broader challenges faced by the Serbian agricultural sector, including issues related to productivity, market access, and the sustainability of traditional farming methods. The most notable trend, however, was the significant increase in the number of beehives, which grew by 38%, mirroring the situation and in Croatia. This indicates a growing recognition of the economic potential of beekeeping in Serbia, possibly driven by the global rise in demand for honey and other bee-derived products.

These trends in both Croatia and Serbia highlight the challenges faced by traditional livestock sectors, particularly in the context of economic pressures, market dynamics, and changing consumer behavior. Furthermore, the main reason for this decline in Serbia was the decreasing profitability of livestock production, which is further exacerbated by the highly debated current "ecological campaign." A similar situation is present in Croatia. A group of authors (Gantner et al., 2024; Gantner et al., 2022) argues that livestock production has been unfairly accused of being an environmental polluter, as this sector actually has the potential to contribute to mitigating climate change. These authors emphasize the importance of livestock production for human nutrition, particularly in providing protein-rich food sources, and argue that, if managed sustainably, livestock farming can play a significant role in environmental conservation and biodiversity.

On the other hand, Crnčan et al. (2017) concluded that in Croatia, the highest revenues from agricultural production in the year 2015 were generated in livestock production, specifically in pig farming and poultry farming. This highlights the economic importance of livestock sectors in the region, despite the challenges they face. The contrasting perspectives on livestock production reflect ongoing debates about its environmental impact and economic significance. While concerns over sustainability and emissions are valid, the contribution of livestock to the economy and food security cannot be overlooked. These discussions suggest the need for a balanced approach to agricultural policy that supports both sustainable practices and the continued economic viability of livestock farming.

Table 3. The structure of livestock fund in Croatia and Serbia

Structure of livestock population	Croatia		Serbia	
	2018	2023	2018	2023
Cattle	414,125	415,204	881,152	725,408
Pigs	1,049,123	852,523	3,266,102	2,263,705
Sheep	636,294	552,083	1,799,814	1,702,682
Goats	80,064	72,809	218,397	149,558
Poultry	11,413,000	10,744,878	23,184,387	21,604,693
Bee hives	372,002	461,497	914,000	1,261,323

Source: MAFF-ARSA-2018, MAFF-ARSA-2023, RIS-SSAHL-2018, RIS-CA-2023.

Furthermore, the value structure of agricultural production is quite similar in both Croatia and Serbia (*Table 4*). Specifically, in this structure, the largest share in the year 2023 was held by the production of cereals and pigs. This reflects the significant role that these sectors play in the agricultural economy of both countries. The production of cereals, being a staple in both national economies, continues to dominate, followed closely by pig farming, which has historically been a cornerstone of livestock production in both countries.

Other sectors, such as dairy production, fruit cultivation, and vegetable farming, contributed to the overall value of agricultural production, but their share remained relatively small in comparison to cereals and pigs. The minor deviations in the participation of these other sectors highlight some sectoral differences but do not indicate major shifts in the overall structure of agricultural production. These similarities in the value composition suggest that the agricultural economies in both countries are heavily reliant on a few key sectors, primarily cereal crops and livestock, and any policy changes or market fluctuations in these areas could have substantial effects on the agricultural economies.

Table 4. Value structure of agricultural production in 2023 in Croatia and Serbia

Croatia		**Serbia**	
Type of agricultural products:	Share in the total value of agricultural production (%)	Type of agricultural products:	Share in the total value of agricultural production (%)
Cereals	16.50	Cereals	24.31
Pigs	13.10	Pigs	11.53
Cattle	12.10	Cattle	5.16
Vegetables	7.30	Vegetables	5.12
Forage crops	7.00	Forage crops	4.17
Dairy	6.60	Dairy	6.11
Poultry	5.40	Poultry	3.08
Oilseeds	5.20	Oilseeds	10.65
Wine	4.80	Wine	9.98
Other	22.00	Other	19.89
Total	100.00	Total	100.00

Source: MAFF-ARSA-2023, RIS-SYRS-2023

Novaković et al. (2024) stated that one of the potential directions for the development of agricultural production is the shift towards organic farming. Furthermore, Tomaš et al. (2019) highlights that in recent years, ecological production has been intensively developing in Croatia, which, to some extent, can be viewed as a response to the increasingly evident climate changes. According to literature sources, organic farming has developed more rapidly in Croatia than in Serbia in recent years. Šeremešić et al. (2024) report that the area dedicated to organic farming in Croatia increased from 23,351 hectares in 2010 to 121,924 hectares in 2022. In contrast, during the same period, Serbia saw an increase from 8,635 hectares to 23,527 hectares. The greater development of organic farming in Croatia compared to Serbia is also reflected in the data presented in *Table 5*. This expansion in organic farming in Croatia can be attributed to various factors, including stronger policy support, increased consumer demand for organic products, and greater investments in sustainable agricultural practices. In contrast, while organic farming is growing in Serbia, the pace remains slower due to challenges such as limited access to organic markets, lower levels of awareness consumers, and a need for stronger institutional support.

Table 5. Ecological / Organic agriculture in 2023 in Croatia and Serbia

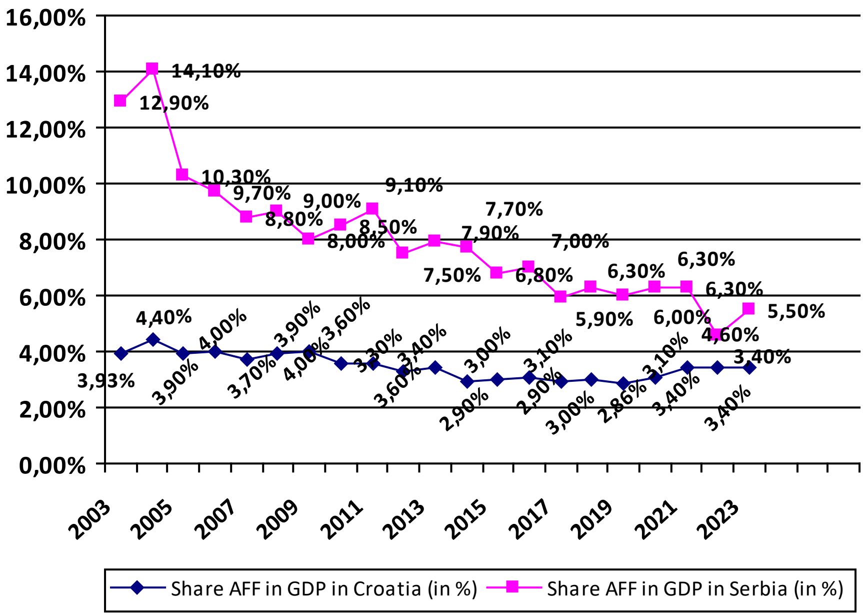
Ecological agriculture (EA) in Croatia		Organic agriculture (OA) in Serbia	
Participation of agricultural holdings (AH) in EA in the total number of AH	4.01%	Participation of agricultural holdings (AH) in OA in the total number of AH	1.29%
Participation of agricultural land areas in EA in the total utilized agricultural land (UAL)	8.10%	Participation of agricultural land areas in OA in the total utilized agricultural land (UAL)	0.90%
Participation of cattle in EA in the total number of cattle	9.20%	Participation of cattle in OA in the total number of cattle	1.20%
Participation of sheep in EA in the total number of sheep	13.20%	Participation of sheep in OA in the total number of sheep	0.90%
Participation of goats in EA in the total number of goats	10.00%	Participation of goats in OA in the total number of goats	0.40%
Participation of pigs in EA in the total number of pigs	0.10%	Participation of pigs in OA in the total number of pigs	0.01%
Participation of poultry in EA in the total number of poultry	0.10%	Participation of poultry in OA in the total number of poultry	0.20%

Source: MAFF-ARSA-2023, RIS-SYRS-2023

The participation of agriculture, forestry, and fisheries (AFF) in Gross Domestic Product (GDP) in Serbia and Croatia over the past two decades (2003-2023) is presented in the graphical representation (Figure 1). A comparative analysis of the data reveals that, throughout the analyzed period, AFF contributed a higher percentage to GDP in Serbia than in Croatia. In the year 2003, at the beginning of the period, the share of AFF in Serbia's GDP was 12.9%, while in Croatia it was 3.93%. This indicates that, in 2003, Serbia's AFF contribution to GDP was nearly three times higher than that of Croatia. However, by the end of the period in 2023, the share of AFF in Serbia's GDP had decreased significantly to just 5.5%, marking a 57% decline compared to 2003, while in Croatia, the share in 2023 was 3.36% (Figure 1). On average, the participation of AFF in GDP between 2003 and 2023 was 8.10% in Serbia and 3.46% in Croatia. This decline in Serbia's AFF contribution reflects broader structural changes in the economy, indicating a shift away from agriculture and rural sectors, while highlighting the relatively stable but smaller role of AFF in Croatia's economic structure.

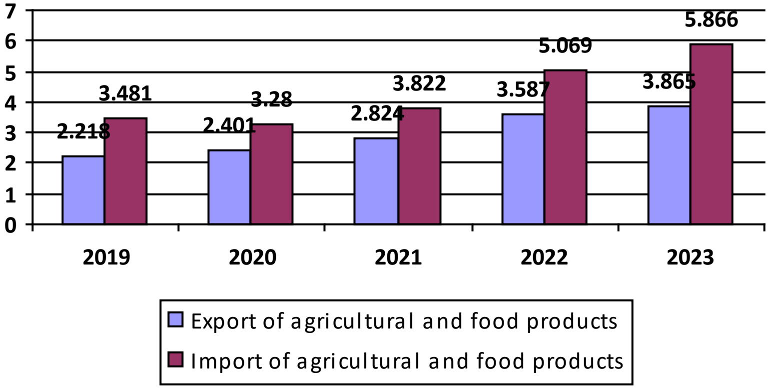
The foreign trade exchange of agricultural and food products in Croatia and Serbia during the period 2019-2023 is graphically represented in Figure 2 and Figure 3. Exports of agricultural and food products from Croatia exhibited a growing trend over the period 2019-2023. Specifically, the value of exports increased by 1,647 million euros, or 74%, between 2019 and 2023. However, a negative aspect is that imports of agricultural and food products also followed an upward trend during the analyzed period. In terms of value, imports increased by 2,385 million euros, or 68%, in 2023 compared to 2019 (*Figure 2*).

Figure 1. Share agriculture, forestry, and fisheries (AFF) in Gross Domestic Product (GDP) in the period 2003 – 2023



Source: SBS-AGDP-2024, RIS-PAFFGDP-2003-2023

Figure 2. Foreign trade exchange of agricultural and food products in Croatia in the period 2019-2023 (in million €)



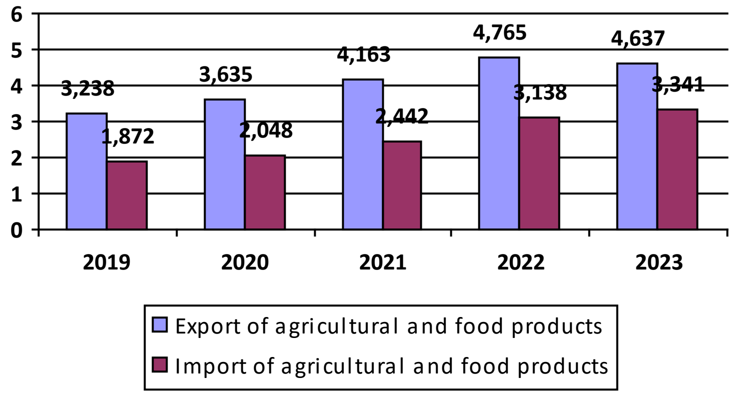
Source: MAFF-ARSA-2023

Exports of agricultural and food products from Serbia demonstrated a rising trend during the 2019-2022 period – in value terms, exports increased by 1,527 million euros, or 47%, in 2022 compared to 2019. However, in 2023, Serbia experienced a slight decline in exports compared to 2022, with a decrease of 128 million euros, or 0.03%.

Similar to Croatia, Serbia also saw an increase in imports of agricultural and food products over the entire analyzed period. The value of imports in Serbia rose by 1,469 million euros, or 78%, in 2023 compared to 2019 (*Figure 3*).

These trends highlight the growing importance of agricultural and food product trade for both countries, but also underscore the need for improving the trade balance by addressing the increasing imports in relation to exports. While both countries experienced growth in exports, the significant rise in imports suggests challenges in achieving self-sufficiency and competitiveness in the agricultural sector.

Figure 3. Foreign trade exchange of agricultural and food products in Serbia in the period 2019-2023 (in million €)



Source: RIS-SYRS-2023

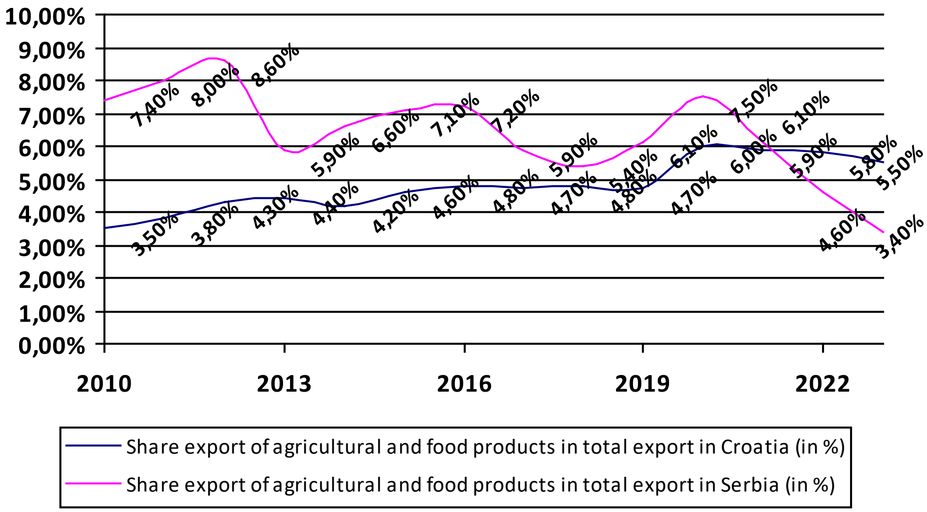
Agricultural products play a crucial role in the export structure of Serbia (Vujičić et al., 2024). Serbia is considered the most significant foreign trade partner among the countries of the Western Balkans (Jalić et al., 2024). Within Serbia's fruit export structure, raspberries hold a dominant share. For instance, between the year 2000 and 2022, the value of frozen raspberry exports increased threefold, while the export value of fresh raspberries grew twentyfold (Kljajić et al., 2023).

The average share of agricultural and food product exports in total exports in both Croatia and Serbia exhibited significant fluctuations during the period from 2010 to 2023 (*Figure 4*). Over this period, the average share of agricultural and food product exports in total exports was 4.8% in Croatia and 6.4% in Serbia. These fluctuations can be attributed to a combination of factors, including changes in global demand, market conditions, and internal policy adjustments in both countries.

The higher share of agricultural exports in Serbia, compared to Croatia, underscores the importance of agriculture in the Serbian economy, particularly in sectors like fruit and vegetable production. However, these numbers also highlight challenges, such as the need to diversify export products and reduce dependency on a few key agricultural products, as well as the impact of external market conditions on the stability of export figures.

In Croatia, while the average share of agricultural exports is lower, it reflects a more diversified export portfolio. The fluctuations observed in both countries suggest that agricultural exports are sensitive to global economic shifts, agricultural production changes, and policy interventions. Future trends will likely depend on these countries' ability to adapt to changing international demands, improve production efficiency, and expand into new export markets.

Figure 4. Share of export of agricultural and food products in total export in Serbia and Croatia in the period 2019-2023 (in %)



Source: SBS-FT-2025, RIS-SYRS-2010-2024

The share of agriculture in total employment in Serbia and Croatia during the period from 2002 to 2022 is presented in Tables 6 and 7. Analyzing the participation of agriculture, forestry, and fishing (AFF) in overall employment, it can be concluded that both countries experienced a declining trend over the analyzed period. This trend highlights significant changes in the structure of employment in these sectors.

Table 6. The share of agriculture in total employment in Serbia in the period 2002 – 2022

Year	Serbia		
	The total number of economically active population	The total number of employees in agriculture, forestry, and fishing (AFF)	The share of employees in AFF in the total number of economically active population (in %)
2002	2,642,987	580,339	21.96
2011	2,304,628	340,186	14.76
2022	2,401,690	106,021	4.41

Source: RIS-EAP-2024

Specifically, the percentage of employees in agriculture, forestry and fishing relative to total employment declined notably by 2022 compared to the first year of the analyzed period. In Croatia, the share of employees in agriculture decreased by 49%, while in Serbia, it showed a much sharper decline of 80%.

Table 7. The share of agriculture in total employment in Croatia in the period 2002 – 2022

Year	Serbia		
	The total number of employees	The total number of employees in agriculture (insured agricultural workers)	The share of employees in agriculture in the total number of employees (%)
2002	1,432,454	32,339	2.26
2011	1,642,474	21,204	1.29
2022	1,619,969	18,657	1.15

Source: RIS-EAP-2024

These results suggest a substantial transformation in the labor market dynamics of both countries, reflecting broader structural changes in their economies. In Croatia, the decrease in agriculture employment could be attributed to ongoing industrialization, urbanization, and the growth of other sectors such as services and manufacturing. Similarly, Serbia has seen a shift away from agriculture towards more diversified economic activities, with significant advancements in urban development and the services sector.

Furthermore, this reduction in AFF employment may also be influenced by changes in agricultural productivity, technological advancements, and the overall modernization of the agricultural sector, which reduces the need for manual labor. Furthermore, the outflow of rural populations to urban areas in search of better opportunities has likely contributed to this trend. Finally, these shifts highlight the evolving nature of the economies in both countries and the need for policies that support rural development, provide alternative employment opportunities in agriculture, and invest in modernizing the sector to improve its competitiveness.

Conclusion

The Both the Republic of Serbia and the Republic of Croatia have rural areas that make up the majority of their territories. Family agricultural farms play a dominant role in the agricultural sector in both countries, and the average size of agricultural holdings is relatively similar. The age and educational structure of family farm owners is also comparable, with the majority being older than 65 years and having a middle level of education. Depopulation of rural areas represents a significant constraint for the development of agriculture and rural development in both countries.

In terms of land use, arable land and gardens dominate in both countries, followed by meadows and pastures, while orchards and vineyards occupy much smaller areas. The livestock fund has shown a decline in the number of animals between 2018 and 2023, with the only increase being in the number of beehives in both Serbia and Croatia. Similarly, the structure of agricultural production in both countries is dominated by the production of cereals and pig farming. When analyzing the development of organic agriculture, Croatia exhibited a higher level of development in 2023, both in crop and livestock production.

Given these similarities, the authors hypothesized that agriculture in both countries holds approximately the same economic significance in the current period. Based on the conducted research, this hypothesis has been confirmed.

Agriculture has a declining economic significance in both countries, despite the growing trend of exports of agricultural and food products in recent years. This conclusion is derived from the following indicators:

- The share of agriculture, forestry, and fishing in gross domestic product (GDP) has shown a declining trend between 2003 and 2023 in both Serbia and Croatia. The percentage of agriculture, forestry, and fishing in GDP fell in 2023 compared to 2003: (a) in Serbia by 57%; (b) in Croatia by 14%.

- Both in Serbia and Croatia, the percentage of employed individuals in agriculture, forestry, and fishing has significantly declined in recent decades. The share of employees in these sectors in total employment decreased in 2022: (a) in Croatia by 49% compared to 2011; (b) in Serbia by 80% compared to 2002.

This evidence points to the fact that, while agriculture remains an important part of the rural economy, its overall economic role has diminished over time in both Serbia and Croatia. Despite this decline, agriculture's role in the rural workforce and the export sector remains a key focus for the future development of rural areas.

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Conflict of interests

The authors declare no conflict of interest.

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