

COMPETITIVENESS OF THE AGRI-FOOD SECTOR OF THE REPUBLIC OF SERBIA

Miloš S. Dimitrijević*, Božidar M. Čakajac and Igor R. Milojević

University of Kragujevac, Faculty of Economics
Liceja Kneževine Srbije 3, 34000 Kragujevac, Serbia

Abstract: The competitiveness of the agri-food products is one of the key factors for promoting export and economic development, especially in developing countries. Competitiveness can be influenced by increasing productivity, applying modern knowledge, innovating processing capacities and producing a high-quality final product with high added value. The agriculture of Serbia is very important for economic growth. In order to improve the competitive advantage of the agri-food sector in foreign markets, it is important to increase its efficiency by introducing modern technologies and approaches. The subject of the paper is to examine the most important export agri-food products of Serbia, as well as the most important markets for their exports. Using the RCA and ARCA indices, the comparative advantages of these products in trade were examined, which is the goal of the research. Multiple regression was then also used to examine the impact on exports. Although significant agri-food products achieve comparative advantages, the decline in their competitiveness has a negative impact on exports. Low pricing policies, as well as inadequate product quality cannot maintain competitiveness in the long run. The structure of the export of agricultural products is also unsatisfactory, bearing in mind that they are products with a low level of processing, and low added value. Therefore, it is necessary to invest in modern equipment, develop innovative approaches, such as organic production and the introduction of innovations to improve quality standards, differentiate products and create a final product with high added value, as important prerequisites for improving competitiveness and promoting the export of the agri-food sector.

Key words: competitiveness, agri-food sector, RCA, ARCA.

*Corresponding author: e-mail: mdimitrijevic@kg.ac.rs

Introduction

Agriculture of the Republic of Serbia (RS) is an important sector of the economy, which is characterized by a number of specificities of production, resources, and tradition, and for this very reason has the potential to improve its competitive position. Many strategic documents recognize agriculture as one of the priorities for economic growth. Increasing productivity and exports, especially foreign trade cooperation with countries with which there is already intensive cooperation in the field of agriculture, can contribute to this. The modern approach to competitiveness is evaluated based on costs and market share of the business entity, but also based on modern technologies and innovations that contribute to market positioning.

The development of agriculture in the RS is already to some extent oriented to the modernization and changes in the production structure, greater market orientation and improvement of productivity in agriculture. Restructuring of production and technology, productivity growth in agriculture, and greater competitiveness in national and international markets are increasingly guided by environmental, energy, and economic criteria (Cvetković and Petrović-Randelović, 2017). Productivity and efficiency are often cited as important factors of competitiveness. Within a market economy, competition contributes to economic growth. In practice, it is described as market rivalry to achieve advantages based on economic activity. In the age of globalization, the importance of competition is increasing in all sectors of the economy, including agriculture.

The subject of the paper is to examine the most important export products of the agri-food sector, as well as the most important markets for their export. The goal of the paper is to point out the comparative advantages of the RS in trade of agri-food products and their impact on exports.

Based on the subject and goal of the research, a research hypothesis was established:

H₁: The most competitive agricultural products have a statistically significant impact on the export markets of the most important trading partners of RS.

The competitiveness of a country is considered as its ability to produce goods or services that meet the conditions of international competition, and at the same time that this positively affects the growth of living standards (Tyson, 1992). Porter's concept of competitive advantage (Porter, 1998) uses the "diamond" model, which includes components such as supply and demand, microeconomic and management factors. The global competitiveness of agri-food exports can be viewed according to the concept of revealed comparative advantage, developed by Balassa (1965). Due to the globalization and liberalization of trade in the global market of agri-food products, the long-term sustainability of the export competitiveness of these products is very important. Although developed countries

tend to be less focused on agricultural products, they are more competitive in the long-term export of such final products, where the added value is higher. Long-term competitiveness can be the result of favorable trade conditions, because more economically developed countries operate in a more favorable environment. Accordingly, long-term competitive advantage is positively correlated with the level of economic development of the country (Bojnec and Fertő, 2017).

The structure of agricultural exports in developing countries is a significant factor affecting the competitiveness of agricultural products. As some developing countries have increased their productivity by cooperating with some foreign companies, the export competitiveness of agriculture has become an important issue (Huo, 2014).

The growth of international trade has given rise to new global actors with multiple comparative advantages. The development of international trade has conditioned the difference between developed countries, which are characterized by advantages in industrialization, and developing countries, which have a comparative advantage in labor-intensive sectors. At the same time, the agricultural sector as a labor-intensive activity and the export of agricultural products gives many developing countries a certain advantage in global competition (Escaith, 2010). Globalization of the world economy has indeed increased the competitiveness of agriculture in certain developing countries (Esterhuizen and Rooyen, 2006). Developed countries also stand out in terms of the competitiveness of the agricultural sector. There is a connection between agricultural competitiveness and economic development. At the same time, the instruments that have a potential impact on increasing agricultural competitiveness, especially in countries that are at a low level of development, include opportunities to apply innovations, measures to improve the transfer of knowledge, advisory services, investments and cooperation (Nowak and Kaminska, 2016).

Horizontal integrations as a form of cooperation are one of the factors that increase the competitiveness of the agricultural sector (Pawlak et al., 2019). For example, cooperatives are often a successful business model for organizing and uniting farmers, and contribute to their competitiveness (Nedanov and Žutinić, 2015). Also, the formation of agro-food clusters can increase the competitiveness and sustainability of agribusiness (Dorzhieva and Dugina, 2015), so there is a need for support for agricultural entities, which should consist of a series of state subsidies, benefits, etc. (Zakharchenko et al., 2020).

Economic entities in agriculture achieve competitiveness through adequate cost management, product differentiation, etc. Among the sources of competitiveness, the following should be highlighted: production technology, input costs, economies of scale, product quality, product differentiation, advertising, etc. Competitiveness is associated with efficient use of resources and factors of production, as well as structural changes. Competitiveness is a feature of economic

growth. The factors affecting the competitiveness of agricultural entities are numerous and can be classified in different ways. Some of them are based on resources in agriculture, such as labor, capital, and land. There are also factors related to intangible resources (such as relational capital, technological resources, know-how, management skills, etc.) or external conditions, such as climate, legal-political issues, etc. (Matyja, 2016).

Productivity can be increased through the introduction of innovations and modern technologies, which also has a positive impact on competitiveness. In addition, competitiveness can be improved by differentiated supply of high-quality agricultural products as well as by their processing. Competitiveness factors are numerous, and the focus is often on the product quality, that is, food safety, environmental protection, quality standards, etc. With the application of new knowledge, investments and modern technology, it is possible to rationally use the available resources, with the aim of increasing productivity and efficiency in production, thus increasing the competitiveness of agricultural and food products on the world market (Milojević et al., 2011).

A certain technical change in the agri-food sector may have a long-term impact on efficiency and competitiveness (Bezat-Jarzębowska and Rembisz, 2013). Innovation and research and development (R&D – Research & Development) are considered key factors of competitiveness in many segments of agricultural development, as they are part of the agribusiness system (Buccirossi et al., 2002). Namely, many contemporary problems in agriculture can be overcome with effective R&D programs and innovative solutions (Maienfisch and Stevenson, 2015). At the same time, public allocations for R&D, i.e., for increasing agricultural productivity and production, are of great importance (Khanal et al., 2017; Fuglie, 2018), so that economic entities that properly manage R&D can better take advantage of numerous opportunities for structural changes, development (Fuglie, 2016), and increased competitiveness.

Modern information and communication technologies, entrepreneurial skills, and cooperation between companies in the vertical supply chain are becoming increasingly important factors in the agri-food sector (Lans et al., 2004), which faces global challenges that must be addressed. Agri-food enterprises need to use modern technologies in production to face a very dynamic and complex environment (Fisher et al., 2000), because the application of these technologies and innovations, as well as the connection and coordination between the different levels of the agri-food sector, plays an important role in increasing its competitiveness (Streeter et al., 1991; Boehlje et al., 2011).

The international competitiveness of agri-food products is extremely important for the development of the agricultural sector and, consequently, for the use of modern information and communication technologies to coordinate and modernize activities within this sector (Streeter et al., 1991). Since the export of

agri-food products is the basis of agricultural development, it is important to increase the technological level of production, productivity and efficiency in this sector (Vlahović et al., 2011). Apart from the level of agricultural households, competitiveness also plays a significant role at the level of companies in the agricultural sector (Sachitra, 2017), where competitiveness should be based on the successful use of adequate technological and personnel solutions to increase the productivity and performance of the company, as important sources of growth competitiveness (Lukić, 2017).

Material and Methods

In general, the components that significantly determine competitiveness are the quantity and quality of goods exports. In practice, the export competitiveness is often determined by considering comparative advantages, as well as other factors. The Balassa index is often used to analyze the comparative advantages. This index is also known as the revealed comparative advantage index or RCA index (Revealed Comparative Advantage index) (Cvetković and Petrović-Randelović, 2017). The index is constructed in the following form (Balassa, 1965; Fischer, 2010; Lee, 2011):

$$RCA = \left(\frac{X_{ij}}{\sum_i X_{ij}} \right) / \left(\frac{X_i}{\sum_i X_i} \right) \quad \text{za } i=1, 2, \dots, I; j=1, 2, \dots, J \quad (1)$$

where X_{ij} is the export of product j from country i , and $\sum_i X_{ij}$ is the total export of country i ; X_i is the world export of that product, and $\sum_i X_i$ is the total world export (Equation 1). This index compares the market share of the country in the export market of product j ($X_{ij}/\sum_i X_{ij}$) with its market share in total world exports ($X_i/\sum_i X_i$). The country has a revealed comparative advantage if $RCA > 1$, and a comparative disadvantage if $RCA < 1$.

In addition to the RCA index, there are a number of alternative measures of comparative advantage. The index of an additional comparative advantage (Additive Revealed Comparative Advantage index – ARCA) is one of them. This index was proposed by Hoen and Oosterhaven (2006) and indicates that this index has greater stability compared to the RCA index. The ARCA index is calculated according to the following formula:

$$ARCA_{JA} = \left(\frac{X_{JA}^A}{X_A^A} \right) - \left(\frac{X_{JREF}}{X_{REF}} \right) \quad (2)$$

where X_{JA}^A is the sector's j export to country A ; X_A^A is the country's total exports; X_{JREF}^{REF} is the sector's j export of reference countries; X_{REF}^{REF} is the total export of the reference countries of the sector (Equation 2). The index values range from -1 to +1. A country has a revealed comparative advantage if $ARCA > 0$, and a revealed comparative disadvantage if $ARCA < 0$. In addition, $ARCA = 0$ if the share of exports of sector j in country A is equal to the share of reference countries.

Table 1. The definition of variables relevant to the competitiveness of the most important agri-food products for export in the RS.

Label	Definition
Dependent variables	
Exp	Total export of all products
Exp_EU (28)	Export to the European Union
Exp_Ger	Export to Germany
Exp_Ita	Export to Italy
Exp_B&H	Export to Bosnia and Herzegovina
Agricultural independent variables	
RCA_cor	RCA – corn (excluding seeds for sowing) – (6 digits – 100590)
RCA_fro_fru	RCA – frozen raspberries, blackberries and other fruits – (6 digits – 081120)
RCA_app	RCA – apples, fresh – (6 digits – 080810)
ARCA_cor	ARCA – corn (excluding seeds for sowing) – (6 digits – 100590)
ARCA_fro_fru	ARCA – frozen raspberries, blackberries and other fruits – (6 digits – 081120)
ARCA_app	ARCA – apples, fresh – (6 digits – 080810)

Source: Authors' research, based on ITC – Trade Map, 2020.

This research was conducted using RCA and ARCA indices to examine the competitiveness of the most important agri-food products for export in the RS (Table 1). The examined competitiveness was used to examine its importance for the total export of the RS and for the most important export markets using multiple regression.

Results and Discussion

The RCA index was used as part of the regression equations to examine the impact of competitiveness on the exports from the RS:

$$Exp_{i,t} = \alpha + \beta_1 RCA_{cor,i,t} + \beta_2 RCA_{fro_fru,i,t} + \beta_3 RCA_{app,i,t} + \varepsilon_{i,t} \quad (3)$$

$$Exp_{EU,t} = \alpha + \beta_1 RCA_{cor,i,t} + \beta_2 RCA_{fro_fru,i,t} + \beta_3 RCA_{app,i,t} + \varepsilon_{i,t} \quad (4)$$

$$Exp_{Ger,t} = \alpha + \beta_1 RCA_{cor,i,t} + \beta_2 RCA_{fro_fru,i,t} + \beta_3 RCA_{app,i,t} + \varepsilon_{i,t} \quad (5)$$

$$Exp_{Ita,t} = \alpha + \beta_1 RCA_{cor,i,t} + \beta_2 RCA_{fro_fru,i,t} + \beta_3 RCA_{app,i,t} + \varepsilon_{i,t} \quad (6)$$

$$Exp_{B\&H,t} = \alpha + \beta_1 RCA_{cor,i,t} + \beta_2 RCA_{fro_fru,i,t} + \beta_3 RCA_{app,i,t} + \varepsilon_{i,t} \quad (7)$$

The robustness check of the data, i.e., the examination of the impact of the competitiveness of agricultural products on the dependent variables was carried out using the ARCA index.

$$Exp_{i,t} = \alpha + \beta_1 ARCA_{cor,i,t} + \beta_2 ARCA_{fro_fru,i,t} + \beta_3 ARCA_{app,i,t} + \varepsilon_{i,t} \quad (8)$$

$$Exp_{EU,t} = \alpha + \beta_1 ARCA_{cor,i,t} + \beta_2 ARCA_{fro_fru,i,t} + \beta_3 ARCA_{app,i,t} + \varepsilon_{i,t} \quad (9)$$

$$Exp_{Ger,t} = \alpha + \beta_1 ARCA_{cori,t} + \beta_2 ARCA_{frofrui,t} + \beta_3 ARCA_{appi,t} + \varepsilon_{i,t} \quad (10)$$

$$Exp_{Ita,t} = \alpha + \beta_1 ARCA_{cori,t} + \beta_2 ARCA_{frofrui,t} + \beta_3 ARCA_{appi,t} + \varepsilon_{i,t} \quad (11)$$

$$Exp_{B\&H,t} = \alpha + \beta_1 ARCA_{cori,t} + \beta_2 ARCA_{frofrui,t} + \beta_3 ARCA_{appi,t} + \varepsilon_{i,t} \quad (12)$$

The most important export agri-food products of the RS are grain corn, fresh apples, frozen fruits (raspberries, blackberries, currants, etc.), of which the most important export is frozen raspberries without sugar (SORS, 2020). Corn belongs to the cereal sector (10), and this sector was the most important agricultural export sector, followed by sector 08 (edible fruits and nuts), where frozen fruits dominated exports, followed by fresh apples (ITC – Trade Map, 2020). Table 2 shows the competitiveness of the most important agri-food export sectors.

Table 2. Determining the competitiveness of the most important agricultural export sectors of the RS (cereals and edible fruits).

Year	RCA -10- Cereals	ARCA -10- Cereals	RCA -08- Edible fruits	ARCA -08- Edible fruits
2006	7.12	0.03	6.94	0.03
2007	3.72	0.01	7.67	0.03
2008	2.10	0.01	6.87	0.03
2009	6.16	0.03	6.93	0.03
2010	7.81	0.04	7.24	0.03
2011	7.28	0.04	7.84	0.03
2012	9.08	0.05	6.67	0.03
2013	5.08	0.03	6.20	0.03
2014	6.39	0.03	6.66	0.03
2015	5.73	0.03	6.90	0.04
2016	5.72	0.03	5.95	0.03
2017	3.86	0.02	5.79	0.03
2018	4.16	0.02	4.73	0.02
2019	5.13	0.02	4.57	0.02

Source: Authors' research, based on ITC – Trade Map, 2020.

Table 2 shows that both sectors (cereals and edible fruits) were competitive, considering the RCA and ARCA indices. Next, the competitiveness of the most important export agri-food products within each sector was examined (Table 3).

Table 3. Determining the competitiveness of the most exported agricultural products of the RS.

Year	Sector 10		Sector 08				Rate of change, 2006=100					
	Corn		Frozen fruits		Apples		Corn		Frozen fruits		Apples	
	RCA	ARCA	RCA	ARCA	RCA	ARCA	RCA	ARCA	RCA	ARCA	RCA	ARCA
2006	26.67	0.026	500.12	0.019	4.82	0.001	0.00	0.00	0.00	0.00	0.00	0.00
2007	5.64	0.006	426.14	0.019	6.52	0.002	-78.84	-75.16	-14.79	0.14	35.21	58.45
2008	5.63	0.007	339.63	0.019	3.24	0.001	-78.89	-72.16	-32.09	-3.57	-32.77	-36.12
2009	21.66	0.030	404.45	0.025	3.82	0.001	-18.76	14.94	-19.13	28.46	-20.73	-8.15
2010	22.53	0.030	397.09	0.019	11.30	0.004	-15.52	17.19	-20.60	-0.61	134.15	199.61
2011	21.25	0.035	397.56	0.018	13.77	0.005	-20.33	34.57	-20.51	-7.60	185.45	259.29
2012	26.56	0.046	392.80	0.016	9.04	0.003	-0.42	75.83	-21.46	-16.83	87.30	127.85
2013	6.48	0.009	314.49	0.016	8.36	0.003	-75.71	-64.44	-37.12	-17.83	73.34	121.61
2014	19.44	0.029	343.04	0.019	13.47	0.005	-27.10	10.44	-31.41	-3.19	179.24	251.72
2015	15.66	0.023	358.31	0.023	18.08	0.007	-41.28	-10.02	-28.36	19.76	274.70	410.87
2016	13.49	0.021	305.59	0.019	18.94	0.008	-49.41	-19.10	-38.90	-2.77	292.53	465.30
2017	10.20	0.014	312.56	0.016	17.26	0.007	-61.76	-44.98	-37.50	-18.96	257.82	384.86
2018	6.99	0.010	302.66	0.014	13.32	0.005	-73.78	-63.05	-39.48	-29.64	176.10	236.58
2019	14.11	0.023	303.28	0.014	16.17	0.006	-47.08	-11.01	-39.36	-28.16	235.17	294.45
	average rates of change, 2006=100						-45.30	-15.92	-29.28	-6.22	144.42	212.79

Source: Authors' research, based on ITC – Trade Map, 2020.

The observed products (Table 3) are competitive, given that their RCA index is greater than 1. Considering competitiveness and according to the ARCA index, all observed products are also competitive given that the ARCA index is greater than 0 for all products. However, a decrease in competitiveness was observed for corn and frozen fruits, while an increase was observed for apples, with the average rate of change in competitiveness according to both the RCA and ARCA indices.

Since there was an increase in the export of the most important agricultural export products of the RS in the most important export markets of these products, Table 4 examines the competitiveness of these products in these markets, i.e., the competitiveness of corn in the most important export markets, namely Romania and Italy, the competitiveness of frozen fruits exported mainly to Germany and France, and the competitiveness of apples exported mainly to Russia and the United Arab Emirates (UAE).

From Table 4, it can be concluded that corn was competitive in both the Romanian and Italian markets, viewed according to both indices, i.e., according to the RCA index, which was greater than 1 in all cases, and to the ARCA index, which was greater than 0 everywhere. The same was true for frozen fruits, competitive in the German and French markets, considering both the RCA and ARCA indices, and for apples competitive in the market of Russia and the United Arab Emirates, also considering both the RCA and ARCA indices.

Table 4. The competitiveness of the most important agricultural export products from the RS in the most important markets

Year	RCA of corn		RCA of frozen fruits		RCA of apples		ARCA of corn		ARCA of frozen fruits		ARCA of apples	
	Romania	Italy	Germany	France	Russia	UAE	Romania	Italy	Germany	France	Russia	UAE
2006	34.69	889.87	1452.48	1470.22	268.98	/	0.026	0.027	0.019	0.019	0.002	/
2007	4.22	70.46	1311.17	1530.66	357.18	13.11	0.006	0.008	0.019	0.019	0.003	0.002
2008	3.04	106.62	838.49	1511.73	260.21	8.79	0.006	0.009	0.019	0.019	0.001	0.001
2009	4.31	1227.86	1150.72	1918.76	320.22	/	0.024	0.031	0.025	0.025	0.002	/
2010	3.68	450.10	1092.43	1933.81	4657.96	/	0.023	0.032	0.019	0.019	0.005	/
2011	3.55	462.14	921.67	1941.94	4113.77	/	0.026	0.037	0.018	0.018	0.006	/
2012	4.57	1101.48	767.24	1592.01	2399.12	29.90	0.037	0.047	0.016	0.016	0.004	0.004
2013	0.97	471.47	657.09	1614.86	2316.63	27.80	0.000	0.011	0.016	0.016	0.004	0.003
2014	2.96	1147.12	754.76	1537.58	5244.17	72.40	0.020	0.030	0.019	0.019	0.005	0.005
2015	1.68	358.27	699.89	1466.58	1225.42	101.81	0.010	0.025	0.023	0.023	0.008	0.008
2016	2.41	634.82	620.67	1041.70	533.12	186.79	0.013	0.023	0.019	0.019	0.009	0.009
2017	1.70	387.20	551.25	757.94	391.57	177.52	0.007	0.016	0.016	0.016	0.007	0.007
2018	1.06	421.06	626.18	669.48	573.35	21.35	0.001	0.011	0.014	0.014	0.005	0.005
2019	1.61	1338.88	554.75	685.83	508.01	27.14	0.009	0.025	0.014	0.014	0.006	0.006

Source: Authors' research, based on ITC – Trade Map, 2020.

All the examined models (Table 5) were statistically significant. It can be concluded that the already established decline in the competitiveness of corn and frozen fruits had a negative impact on both total exports and exports to the most important export markets, and this impact was statistically significant in the case of frozen fruits. The competitiveness of apples had a statistically significant and positive influence on the export of the RS (statistical significance was not recorded only in the fifth model). It can be concluded that the increase in the competitiveness of apples (Table 4) had a positive impact on both the total export of the RS and the export to the most important export markets, in contrast to corn and frozen fruits, because the decrease in their competitiveness (Table 4) had a negative effect on the export of the RS (Table 5).

All models presented in Table 6 were statistically significant. The robustness of the data was proven, since the same impact of competitiveness on the exports of the RS was obtained using the ARCA index, i.e., the decline in the competitiveness of corn and frozen fruits had a negative impact on exports, while the increase in the competitiveness of apples had a positive impact. Statistical significance for corn was not confirmed in the first, third, and fifth models, and for frozen fruits in the fourth model.

Table 5. The impact of the competitiveness of the most important agricultural export products on the export of the RS using the RCA index.

Label	Model 1	Model 2	Model 3	Model 4	Model 5
Dependent variables	Exp	Exp_EU (28)	Exp_Ger	Exp_Ita	Exp_B&H
Intercept	***28516742.03 (5.25)	***18001646.28 (4.36)	***3438538.17 (4.78)	**3104162.95 (2.63)	***2290361.97 (7.55)
RCA_cor	-3399.37 (-0.04)	-8156.34 (-0.12)	-158.85 (-0.01)	-8925.15 (-0.46)	-1683.44 (-0.34)
RCA_fro_fru	***-49360.25 (-3.45)	***-32544.59 (-2.99)	***-6495.86 (-3.43)	*-5122.29 (-1.65)	***-2956.42 (-3.70)
RCA_app	*213796.95 (1.73)	*192701.73 (2.05)	**39602.12 (2.42)	*50839.93 (1.89)	945.34 (0.14)
Adjusted R ²	0.81	0.79	0.83	0.64	0.76
F-statistic	***18.94	***17.22	***22.61	***8.61	***15.06

Note: beta coefficients in parentheses, t-values in parentheses; *, **, *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

Source: Authors' research, based on ITC – Trade Map, 2020.

Table 6. The impact of the competitiveness of the most important agricultural export products on the export of the RS using the ARCA index.

Label	Model 1	Model 2	Model 3	Model 4	Model 5
Dependent variables	Exp	Exp_EU (28)	Exp_Ger	Exp_Ita	Exp_B&H
Intercept	***2199547.56 (5.51)	***14396593.98 (5.16)	***2569680.98 (4.75)	**2078223.80 (2.68)	***1675035.01 (5.91)
ARCA_cor	-71683627.02 (-1.35)	*-51306281.46 (-1.38)	-9393906.24 (-1.31)	*-16554845.19 (-1.61)	-5159089.94 (-1.37)
ARCA_fro_fru	***-646709379.38 (-3.22)	***-458173610.94 (-3.27)	***-83719686.19 (-3.08)	-46068658.81 (-1.18)	*-28412520.49 (-1.99)
ARCA_app	***983792643.86 (3.68)	***757459321.77 (4.06)	***15722576306 (4.35)	***18622619836 (3.60)	*35649433.35 (1.88)
Adjusted R ²	0.71	0.73	0.74	0.56	0.42
F-statistic	***11.41	***12.78	***13.06	***6.61	***4.20

Note: beta coefficients in parentheses, t-values in parentheses; *, **, *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

Source: Authors' research, based on ITC – Trade Map, 2020.

Investments in modern equipment and accompanying production processes are essential for improving competitiveness and promoting exports. The space for increasing competitiveness lies in the significant natural resources of the RS, in the sphere of improving quality standards and product range, faster penetration of innovations, etc. (Cvetković and Petrović-Randelović, 2017). Developing

innovative approaches, such as organic production, in modern conditions, is of particular importance, both from the aspect of quality and in terms of increasing the export competitiveness of the agricultural sector.

Although there are natural resources for the development of organic agriculture, the export of organic products from the RS was at a low level (Table 7). Therefore, we should work to introduce innovative production methods of this type so that the competitiveness of products that are of great importance for the export and economic development of the RS does not decrease, because such a development approach is sustainable. In the RS, organic production is still insufficiently developed. Also, buying organic food in Serbia is still at a very low level (Mitić and Čolović, 2022). On the other hand, organic agriculture is constantly growing in the world (Savić, 2022). It is encouraging that the area under organic production in the RS is growing year by year, but the number of producers decreased in 2019 compared to 2018 (SORS, 2020).

Table 7. The export of organic products of the RS.

Year	Export of organic products, in million euro	% of the total merchandise exports of the RS
2012	4	0.05
2013	10	0.09
2014	10	0.09
2015	19	0.16
2016	18	0.13
2017	18	0.12
2018	18	0.11
2019	18	0.10

Source: FIBL statistics, 2020.

Development policies aimed at increasing the competitiveness of agrarians, through innovations, simultaneously raise the issue of improving the quality of agricultural and food products (Curzi et al., 2014). Consequently, the role of organic agriculture is determined by whether it can be more competitive than conventional agriculture, which depends on the productivity of organic agriculture and the demand for organic products (De Ponti et al., 2012).

Despite the pronounced comparative advantages of the RS, the export structure of the agricultural and food sector is unsatisfactory (raw materials, products with a lower degree of processing, a small share of livestock products, etc.). The example of the RS shows that expressed comparative advantages are not at the same time a reflection of a strong competitive position, but only a reflection of a certain “vitality” of the agricultural sector (Đukić et al., 2018). The structure of RS exports includes labor-intensive products such as raw materials and products with a low level of processing. Exports of technologically intensive products are in the minority. In the

international market, few products are competitive in terms of high quality. Prices for certain products have also decreased, making it difficult for agricultural products from the RS to compete with bidders from other countries. Accordingly, it is necessary to work integrally and continuously to increase productivity, quality and quantity of production, to improve the structure of production and export, in accordance with demand and other relevant factors (Milojević et al., 2011).

The investment in modern technologies is an important prerequisite for the competitiveness of farmers and agri-food export. The increase in the value of exports of agri-food products encourages primary agricultural production and processing of primary products, the import of modern equipment and cleaner technology for the needs of agri-food production, processing or marketing of these products. The RS, from the aspect of agriculture, must promote the maintenance and increase competitiveness in the EU markets, with which it achieves the biggest part of foreign trade, but also in the markets of other countries. The space for increasing competitiveness lies in the significant natural resources that are still underutilized in agriculture, in the sphere of improving product quality standards, improving the product assortment, introducing new types of production and faster penetration of innovations in the agri-food sector (Cvetković and Petrović-Randelović, 2017).

Conclusion

The product quality of the RS, on the basis of which frozen fruits and apples are competitive at the world level, and the low price, on the basis of which corn becomes competitive, are not sufficient to achieve this competitiveness in the long term. It is also necessary to renew processing capacities, as well as to create a final high-quality product with high added value. In addition, it is important to organize production and join clusters in order to achieve greater bargaining power as well as chances for financing. It is precisely the lack of the mentioned factors, as observed in this research, that led to a decrease in the competitiveness of the observed products, i.e., corn and frozen fruits, which had a negative impact on the exports from the RS. At the same time, apples, for example, experienced an increase in competitiveness, which had a positive impact on exports. Accordingly, the hypothesis that the most competitive agricultural products have a statistically significant impact on the export markets of the most important trading partners of the RS was confirmed. It was also found that the improvement of product quality had a positive impact on the export and competitiveness of the agri-food sector.

Despite the pronounced comparative advantages of the RS, the export structure of the agri-food sector was unsatisfactory. In addition to improving the quality of agricultural products, it is important to innovate the production process itself and process primary agricultural products into products of higher processing levels, which can influence the increase of the competitiveness and exports of the agri-food sector.

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KONKURENTNOST POLJOPRIVREDNO-PREHRAMBENOG SEKTORA REPUBLIKE SRBIJE

Miloš S. Dimitrijević*, Božidar M. Čakajac i Igor R. Milojević

Univerzitet u Kragujevcu, Ekonomski fakultet
Liceja Kneževine Srbije 3, 34000 Kragujevac, Srbija

R e z i m e

Konkurentnost poljoprivredno-prehrambenih proizvoda je među ključnim faktorima u podsticanju izvoza i privrednog razvoja, posebno za zemlje u razvoju. Povećanjem produktivnosti, primenom savremenih znanja, inoviranjem prerađivačkih kapaciteta i proizvodnjom kvalitetnog finalnog proizvoda sa većom dodatom vrednošću može se uticati na konkurentnost. Poljoprivreda Srbije je veoma značajna za ekonomski rast. U cilju poboljšanja konkurentske prednosti poljoprivredno-prehrambenog sektora na inostranim tržištima bitno je povećati njegovu efikasnost uvođenjem savremenih tehnologija i pristupa. Predmet rada je da istraži najznačajnije izvozne poljoprivredno-prehrambene proizvode Srbije, kao i najznačajnija tržišta njihovog izvoza. Pomoću indeksa RCA i ARCA ispitane su komparativne prednosti ovih proizvoda u trgovini, što je cilj istraživanja, a zatim višetrukom regresijom i uticaj na izvoz. Iako značajni poljoprivredno-prehrambeni proizvodi ostvaruju komparativne prednosti, opadanje njihove konkurentnosti se negativno odražava na izvoz. Politika niskih cena, kao i neodgovarajući kvalitet proizvoda ne mogu da očuvaju dugoročnu konkurentnost. Takođe, struktura izvoza poljoprivrednih proizvoda je nezadovoljavajuća, imajući u vidu da su to proizvodi niže faze prerade, sa niskom dodatom vrednošću. Stoga je neophodno ulaganje u modernu opremu, razvijanje inovativnih pristupa poput organske proizvodnje i brži prodor inovacija u cilju poboljšanja standarda kvaliteta, diferencijacije asortimana proizvoda i stvaranja finalnog proizvoda sa visokom dodatom vrednošću, kao bitne preduslove za poboljšanje konkurentnosti i podsticanje izvoza poljoprivredno-prehrambenog sektora.

Ključne reči: konkurentnost, poljoprivredno-prehrambeni sektor, RCA, ARCA.

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* Autor za kontakt: e-mail: mdimitrijevic@kg.ac.rs