

THE COMPETITIVENESS OF BAKERY GRAIN MARKET IN ROMANIA AND BULGARIA – A COMPARATIVE ANALYSIS

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Abstract

The bakery grain market is an important economic sector of the food industry in Romania and Bulgaria, this product has always been part of the country's traditions. Bread and bakery products are widely consumed in both countries, based on flour obtained from bakery grains. In 2023, the area cultivated with cereals for the production of grain was 1,977.8 thousand hectares in Bulgaria and 5,239.8 thousand hectares in Romania and the harvested production in EU standard humidity was 10,343.5 thousand tons in Bulgaria and 24,007.9 thousand tons in Romania. Competitiveness is a concept used often for the analysis of an agricultural sector, at the macroeconomic level, being in a close relation with food security and international trading activity from that sector. The subject of this study is represented by the analyze of the competitiveness of two categories of bakery grains: wheat and rye, these two being considered the most used grains for the production of bakery products. In this study it was compared the bakery grain market competitiveness from Romania with the one from Bulgaria. The main indicators used for measuring competitiveness, and used also in this study are: bread and bakery products consumption (from 2019 to 2029), sales volume per capita in 2023, area harvested with wheat and rye (from 2018 to 2022), the production of wheat and rye (from 2018 to 2022), indicators related to foreign trade (import, export and trade balance, for the period), and Balassa Index calculated for wheat, and meslin and rye, for the last 15 years. One of the key findings of the study is that the area harvested with wheat and rye remained constant in both countries from 2018 to 2022. During this period, wheat production in Bulgaria increased by 8%, while it decreased by 14% in Romania. Additionally, rye production rose by 0.1% in Bulgaria and by 23.6% in Romania. In the case of wheat and meslin, trade balance is positive for both countries, while in the case of rye trade balance is positive only for 2021-2023 in Bulgaria, in rest being negative for both countries. The export of wheat and meslin on the world market provides a comparative advantage, particularly for Bulgaria, with a Balassa index of 13.8 in 2023, and for Romania, with a Balassa index of 8.70 in the same year. However, the Balassa index for rye indicates that neither Romania nor Bulgaria has a comparative advantage regarding rye.

Keywords: competitiveness, bakery grain, comparative analysis, Romania, Bulgaria

JEL: Q10, Q17

Introduction

In general, competitiveness represents a term with multiple and various meanings as other authors outlined when examined this issue in their paper (Voinescu & Moisoiu, 2015; Lee & Karpova, 2018, Maslova et al., 2019). European Commission (2009) defined competitiveness as the sum of the economic performance of a state taking in consideration the capacity of the state to assure a high standard of life, without affecting the environment and to provide an enough number of jobs. Latruffe (2010)

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defined competitiveness as “the ability to face competition and to be successful when facing competition”, bringing a different point of view compared with the European Commission definition.

Competitiveness can be measured and analyzed on several group of levels like: firms, sectors, regions, national, multinational economies (Peneder, Rammer, 2018) or at micro, meso or macro levels (Maslova et al. 2019).

Efficiency is an indicator determined by the market demand that influence the competitiveness, because the competitive agriculture is based on the efficient managing of farms. (Manevska-Tasevska & Rabinowicz, 2014) and according to Mukhametgaliev et al. (2020), grain industry can be influenced by the market prices, determined by market demand, quality and the volume of market capacities. In their study regarding India’s agri-food products competitiveness, Yadav and Chattopadhyay (2024) identified the world market size, production’s yield, exchange rate, production cost, openness, and export price, as being the factors who influence the most the export competitiveness.

Bakery products represents the last step from the bakery sector (bread, pastries, and muffins), being produced especially from wheat, barley or rye flour. For the analysis of the competitiveness on the bakery grain market in Romania and Bulgaria, the two types of bakery grains wheat and rye were chosen for the present study. These two grains were used for this study, being considered through the most important grains for this sector, cultivated on large lands (Boboc et al., 2019).

Regarding bread and bakery sector, in Europe seems to increase in the following years as it can be seen in the forecast revealed by Statista in Figure 1.

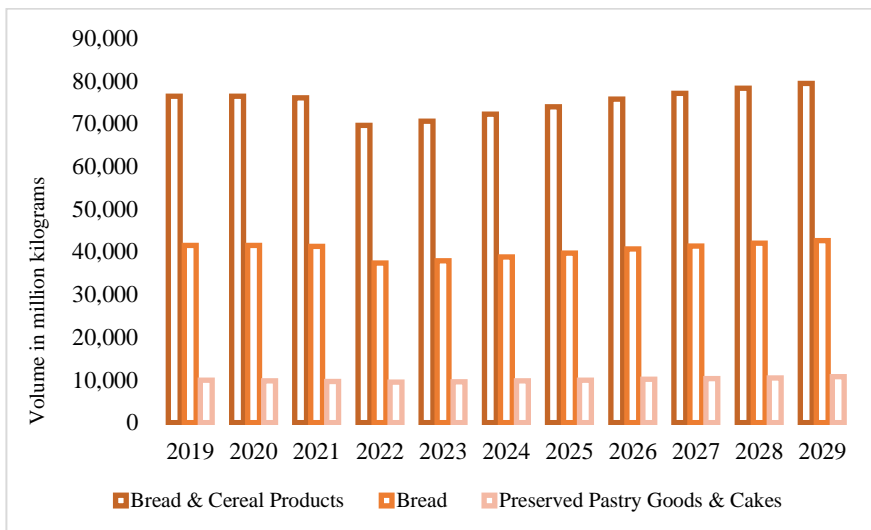


Figure 1. Bread and bakery consumption volume in Europe from 2019 to 2029, by category (in million kilograms)

Source: Statista Consumer Market Insights (Statista, 2024a)

In 2019 the consumption of bread and cereal products in Europe was 76,408.03 thousand tons, the consumption of bread was 41,494.58 thousand tons and the consumption of preserved pastry goods and cakes was 9,965.62 thousand tons. From 2019 to 2024, the consumption decreased with 6% (4,207 thousand tons) for bread and cereal products, 7% (2,721 thousand tons) for bread and with 2% (211 thousand tons) for preserved pastry goods and cakes. However, estimated consumption up to the year 2029 is 79,369.04 thousand tons for bread and cereal products, 42,571.4 thousand tons for bread and 10,723.8 thousand tons for preserved pastry goods and cakes.

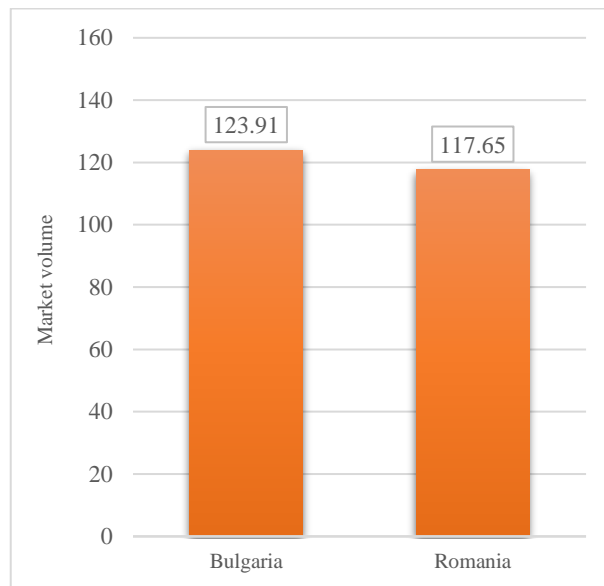


Figure 2. Per-capita volume sales in the bread & bakery products market, in 2023 (in kilograms)

Source: Statista Consumer Market Insights (Statista, 2024b)

In 2023, the sales volume of bread & bakery products per capita was 124 kilograms in Bulgaria and, with 5% less, respective 118 kilograms in Romania, as can be seen in Graphic 2.

Methodological framework

Because wheat and rye are considered one of the most used grains for the production of bakery products, these 2 were the subject of the analysis of all indicators in this study, for the comparative analysis between Romania and Bulgaria.

In the first part of this paper, general indicators available on FAOSTAT are the dynamics of production of wheat and rye in Romania and Bulgaria (for the period 2018 – 2022) measured in tons, area harvested with wheat and rye in Romania and

Bulgaria (for 2018 – 2022) measured in hectares. Foreign trade indicators: imports, exports and trade balance of raw materials for the bakery sector (wheat and meslin and rye categories), for both countries measured in USD thousand, available at Intracen.org for the period 2019 – 2023 indicators analyzed also by Manevska-Tasevska and Rabinowicz (2014) in their studies in order to measure the competitiveness from Romania and Bulgaria were analyzed for an overview of the sector. In the second part of this study, the Balassa index was analyzed in order to determine the comparative advanced index bakery grains market in Romania vs. the one from Bulgaria, this method being considered one of the most used by researchers (Maslova et al. 2019).

Balassa Index (RCA) (Balassa, 1965) measures normalized export shares relative to exports of the wheat and rye for Romania and Bulgaria as described in the equation (1).

$$RCA_{ij} = (X_{ij} / X_{ik}) / (X_{nj} / X_{nk}) \quad (1)$$

Where:

X: export value

i: Romania/Bulgaria

j: wheat/rye

k: all trade goods

n: the world

All of the data taken into consideration for this study were chosen according to the last 5 years available in the queried database.

Results

Indicators representative for the main bakery grains considered in this paper, wheat and rye, were analyzed in order to determine the competitiveness from bakery grain market.

Table 1. Area harvested (hectares) with wheat

	2018	2019	2020	2021	2022	2022/2018
Bulgaria	1,212,010	1,198,680	1,200,180	1,206,190	1,206,580	99.6%
Romania	2,116,150	2,168,370	2,155,250	2,175,080	2,168,660	102.5%

Source: own compilation based on data available on FAOSTAT (FAOSTAT, 2024)

Table 1 shows the evolution of area harvested with wheat in Romania and Bulgaria between 2018 and 2022. In 2018 the area harvested with wheat was 1,212 thousand hectares in Bulgaria and 2,116 thousand hectares in Romania. In 2022 the area harvested with wheat was 1,207 thousand hectares in Bulgaria and 2,169 thousand hectares in Romania.

In the analyzed period, from 2018 to 2022, the area harvested with wheat decreased with 0.4% (5.4 thousand hectares) in Bulgaria and increased with 2.5% (52 thousand hectares) in Romania. During the analyzed period, the area cultivated with wheat in Romania was bigger than the one from Bulgaria with approximatively 80% in all 5 years analyzed, more exactly with 963 thousand hectares in 2022.

Table 2. Area harvested (hectares) with rye

	2018	2019	2020	2021	2022	2022/2018
Bulgaria	8,320	6,100	5,350	7,630	8,330	100.1%
Romania	10,260	9,360	11,250	12,110	12,680	123.6%

Source: own compilation based on data available on FAOSTAT (FAOSTAT, 2024)

Table 2 shows the evolution of area harvested with rye in Romania and Bulgaria between 2018 and 2022. In 2018 the area harvested with rye was 8.3 thousand hectares in Bulgaria and 10.3 thousand hectares in Romania. In 2022 the area harvested with rye was 8.3 thousand hectares in Bulgaria and 12.7 thousand hectares in Romania.

In the analyzed period, from 2018 to 2022, the area harvested with rye increased with 0.1% (10 thousand hectares) in Bulgaria and with 23,6% (2.4 thousand hectares) in Romania. During the analyzed period, the area cultivated with rye in Romania was bigger than the one from Bulgaria with 23% (1.9 thousand hectares) in 2018, 53% (3.2 thousand hectares) in 2019, 110% (5.9 thousand hectares) in 2020, 58.7% (4.5 thousand hectares) in 2021 and with 52,22% (4.4 thousand hectares) in 2022.

Table 3 shows the evolution of wheat production in Romania and Bulgaria between 2018 and 2022. Production of wheat was 5,954 thousand tons in 2018 in Bulgaria and with 4,189 (70.35%) thousand tons more in Romania, respective 10,143 thousand tons. In 2022, the production of wheat in Bulgaria was 6,448 thousand tons and in Romania it was with 2,237 more (34.69%), 8,684 thousand tons.

Table 3. Production (tons) of wheat

	2018	2019	2020	2021	2022	2022/2018
Bulgaria	5,954,520	6,319,630	4,847,940	7,342,990	6,447,770	108.3%
Romania	10,143,670	10,297,110	6,392,370	10,433,750	8,684,240	85.6%

Source: own compilation based on data available on FAOSTAT (FAOSTAT, 2024)

In the analyzed period, from 2018 to 2022, the production of wheat increased with 8.3% (493 thousand tons) in Bulgaria and decreased with 14.4% (1,459 thousand tons) in Romania. During the analyzed period, the production of wheat in Romania

was bigger than the one from Bulgaria with 70% (4,189 thousand tons) in 2018, 63% (3,977 thousand tons) in 2019, 32% (1,544 thousand tons) in 2020, 42.09% (3,090 thousand tons) in 2021 and with 35% (2,236 thousand tons) in 2022.

Table 4. Production (tons) of rye

	2018	2019	2020	2021	2022	2022/2018
Bulgaria	14,080	12,180	10,010	16,880	17,300	122.9%
Romania	28,640	26,180	28,490	35,100	34,850	121.7%

Source: own compilation based on data available on FAOSTAT (FAOSTAT, 2024)

Table 4 shows the evolution of rye production in Romania and Bulgaria between 2018 and 2022. Production of rye was 14,080 thousand tons in 2018 in Bulgaria and with 14,560 (103.4%) thousand tons more in Romania, respective 28,640 thousand tons of rye. In 2022, the production of rye in Bulgaria it was 17,300 thousand tons and in Romania it was with 17,550 thousand tons more (101.45%), 34,850.

In the analyzed period, from 2018 to 2022, the production of rye increased with 22.9% (3.2 thousand tons) in Bulgaria and with 21.7% (6.2 thousand tons) in Romania. During the analyzed period, the production of rye in Romania was bigger than the one from Bulgaria with 103% (14 thousand tons) in 2018, 114% (14 thousand tons) in 2019, 185% (18 thousand tons) in 2020, 107% (18 thousand tons) in 2021 and with 101% (18 thousand tons) in 2022.

Recently, the analysis of cereal foreign trade became an important subject for authors due to the geopolitical situation that is present nowadays in the world. For the value of trade balance analysis, data available on Intracen.org (International Trade Centre, 2024) were used, for two categories of bakery grains: wheat and meslin and rye, for both countries, Romania and Bulgaria, for the period 2019 – 2023.

Meslin is a blend of wheat and rye harvested for some ecological farms, used for the production of flour and being very good for the production of bakery products. (Breg et al., 2006)

Table 5 shows the evolution of foreign trade with wheat and meslin in Romania and Bulgaria between 2019 and 2023. In the case of wheat and meslin, the domestic production covers the necessities with wheat from both countries, so the trade balance is positive for the entire analyzed period.

Table 5. Trade balance with wheat and meslin (USD thousand)

Bulgaria						
	2019	2020	2021	2022	2023	2023/2018
Import	14,465	9,410	18,396	2,4214	24,189	167%
Export	946,988	699,212	1,336,693	1,453,475	1,682,418	178%
Trade balance	932,523	689,802	1,318,297	1,429,261	1,658,229	178%
Romania						
	2019	2020	2021	2022	2023	2023/2018
Import	177,125	254,430	257,186	315,548	191,898	108%
Export	1,272,159	948,815	1,820,092	2,099,413	2,227,737	175%
Trade balance	1,095,034	694,385	1,562,906	1,783,865	2,035,839	186%

Source: own compilation based on data available on Intracen.org (INTRACEN, 2024)

In Bulgaria, the imports of wheat decreased with 65% from 2019 to 2020, and increased with 95% from 2020 to 2021, with 32% from 2021 to 2022 and remain the same from 2022 to 2023. In Romania, the imports increased with 44% from 2019 to 2020, with 1% from 2020 to 2021 and with 23% from 2021 to 2022, however, from 2022 to 2023 the Romania's imports of wheat decreased with 39%. From 2019 to 2023 the value of imports with wheat increased with 67% in Bulgaria (9,724 thousand Dollars) and with 8% in Romania (14,773 thousand Dollars).

Regarding the exports of wheat and meslin, in Bulgaria the value of exports decreased with 26% from 2019 to 2020, and increased with 91% from 2020 to 2021, with 9% from 2021 to 2022 and with 16% from 2022 to 2023. In Romania, the exports decreased with 25% from 2019 to 2020, and increased with 92% from 2020 to 2021 and with 15% from 2021 to 2022 and with 6% from 2022 to 2023. From 2019 to 2023 the value of exports with wheat increased with 78% in Bulgaria (735,430 thousand Dollars) and with 75% in Romania (955,578 thousand Dollars). Table 6 shows the evolution of foreign trade with rye in Romania and Bulgaria between 2019 and 2023. In the case of rye, the domestic production covers the necessities with rye from Bulgaria in the last years, trade balance being positive for 2021 – 2023 period. Meanwhile, the production of rye does not cover the consumption from Romania, so the imports are necessary, conducting to a negative trade balance from 2019 to 2023.

Table 6. Trade balance with rye (USD thousand)

Bulgaria						
	2019	2020	2021	2022	2023	2023/2018
Import	237	91	130	109	96	41%
Export	97	59	240	143	120	124%
Trade balance	-140	-32	110	34	24	-17%
Romania						
	2019	2020	2021	2022	2023	2023/2018
Import	638	794	553	1,226	1,032	162%
Export	93	48	37	65	111	119%
Trade balance	-545	-746	-516	-1,161	-921	169%

Source: own compilation based on data available on Intracen.org (INTRACEN, 2024)

In Bulgaria, the imports of rye decreased with 62% from 2019 to 2020, increased with 43% from 2020 to 2021 and decreased with 16% from 2021 to 2022 and with 12% from 2022 to 2023. In Romania, the imports with rye increased with 24% from 2019 to 2020, decreased with 30% from 2020 to 2021, increased with 122% from 2021 to 2022, however, from 2022 to 2023 the Romania's imports of rye decreased with 16%. From 2019 to 2023 the value of imports with rye decreased with 59% in Bulgaria (141 thousand Dollars) and increased with 62% in Romania (394 thousand Dollars).

Regarding the exports of rye, in Bulgaria the value of exports decreased with 39% from 2019 to 2020, increased with 307% from 2020 to 2021, decreased with 40% from 2021 to 2022 and with 16% from 2022 to 2023. In Romania, the exports decreased with 48% from 2019 to 2020, and with 23% from 2020 to 2021 and increased with 76% from 2021 to 2022 and with 71% from 2022 to 2023. From 2019 to 2023 the value of exports with wheat increased with 24% in Bulgaria (23 thousand Dollars) and with 19% in Romania (18 thousand Dollars).

Trade balance with wheat is positive during the entire period, while in the case of rye the trade balance is positive only in 2022 and 2023, fact that can be caused by the multiple problems in this sector, noted by Radu (2019), from the small storage places for grains, grain transport system, to the lack of employee or machineries.

One of the most used trade measures of competitiveness is revealed comparative advantage, a market share indicator (Manevska-Tasevska & Rabinowicz, 2014) that was composed by Balassa (1965) and modified by Vollrath (1991). (Latruffe, 2010) In order to determine the revealed comparative advantage, Balassa index was represented in Table 7 and Figure 3, being calculated by reporting Romania's/Bulgaria's wheat and rye export share from Romania's/Bulgaria's total exports of

wheat and rye to the world's wheat and rye export share from total world's exports for the last 15 years available on Intracen.org.

Table 7. Balassa indexes for wheat and meslin and rye exports of Romania and Bulgaria on foreign markets

Year	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Bulgaria															
Rye	0,01	0,58	1,06	0,33	0,23	0,38	0,25	0,00	0,28	0,40	0,17	0,07	0,24	0,14	0,13
Wheat	7,06	10,05	7,83	10,09	12,36	9,28	10,74	12,93	11,08	12,03	13,16	8,56	12,60	10,47	13,81
Romania															
Rye	0,86	0,20	0,25	0,35	0,17	0,03	0,02	0,10	0,21	0,05	0,07	0,03	0,02	0,03	0,06
Wheat	3,96	4,64	2,62	4,50	7,59	7,23	5,38	8,67	7,19	7,18	7,65	5,22	8,03	7,85	8,70

Source: own compilation based on data available on Intracen.org (INTRACEN, 2024)

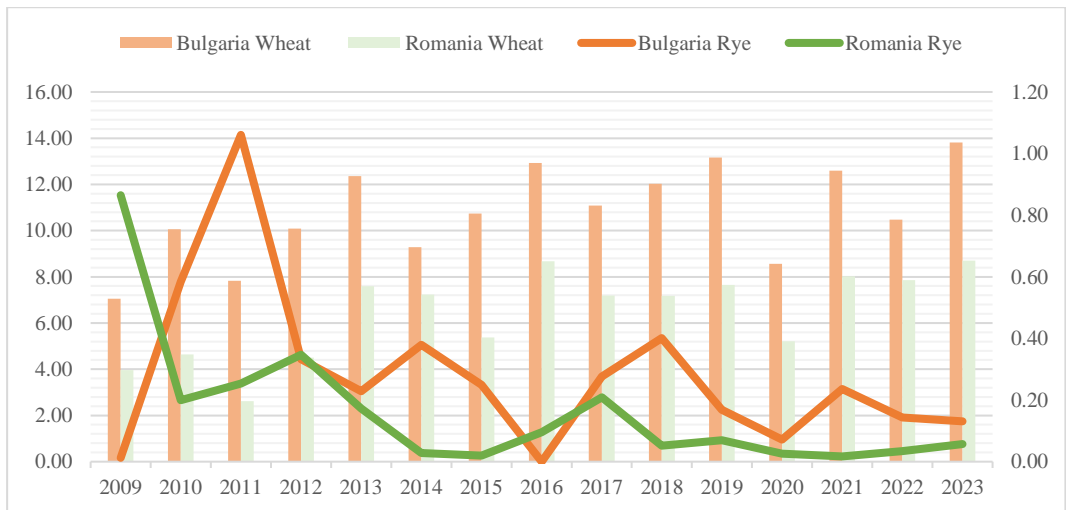


Figure 3. Balassa indexes for wheat and meslin and rye exports of Romania and Bulgaria on foreign markets

Source: own compilation based on data available on Intracen.org (INTRACEN, 2024)

The results of the analysis show that Bulgaria have a highly comparative advantage in terms of wheat and meslin provide a significant comparative advantage on the global market for Bulgaria and Romania, as evidenced by the Balassa index values of 13.8 and 8.7 in 2023. The Balassa index for rye indicates that neither Romania nor Bulgaria possesses a comparative advantage in this crop taking into consideration the Balassa index values.

In Romania, the highest comparative advantage for rye was 0.86 in 2009, first year analyzed and in 2023, 8.7 for wheat and meslin. In Bulgaria, the highest comparative advantage for rye was in 2010, 0.58 and for wheat in 2023, 13.81.

Conclusions

The importance of bakery grain sector is reflected in the statistics that shows that the consumption of Europe bakery products is forecasted to reach 40 million tons by 2029. Bread and bakery products are basic food in Romania and Bulgaria, the bakery grain being continuously dynamic.

The aim of this paper was to compare the bakery grain market competitiveness from Romania with the one from Bulgaria, taking into consideration a series of important indicators for this sector, most of them being used by other authors to analyze competitiveness, as described in "Introduction" section of the present paper.

The bakery grain sector from Romania is different, compared with the one from Bulgaria considering the area harvested with wheat and also with rye and the productions that are double in case of Romania, compared with Bulgaria. Another similarity between the two countries regarding wheat and meslin is the positive trade balance, both countries exporting more than importing. The bakery grain sector from Romania is the same, compared with the one from Bulgaria considering the trade balance with rye. The trade balance with rye in Bulgaria is negative from 2019 to 2020, while the trade balance with rye in Romania is negative for the entire period, from 2019 to 2023.

The export of wheat and meslin on the world market, in the broadest sense, bring a comparative advantage especially for Bulgaria, the Balassa index being 13,8 in 2023 and also for Romania, which had a value of Balassa index of 8,70 in the same year. The Balassa index for rye indicate that both countries, Romania and Bulgaria do not bring comparative advantages.

In general, to increase the competitiveness, the solutions identified by (Mizik, 2021) can be taking into consideration: supportive legislation, high value added, increasing the quality of production, innovations, improvements in terms of infrastructure, cooperation, European schemes, exchange rate, or export orientation. These aspects can be considered also in order to increase the competitiveness of the bakery grain market in Romania and Bulgaria.

It is important to underline that this research has limitations, especially regarding the differences between countries in terms of share of land, income of people from each country, surface of country etc. that were not taken into consideration at all in this study, this study being focused by the macroeconomic level of competitiveness between Romania and Bulgaria.

Other researchers can use multiple ways to conduct studies regarding the comparative analysis in terms of competitiveness between the two countries, like expanding

the analysis of Balassa Index, add more indicators in order to be analyzed or taking into consideration more categories of bakery grains.

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References

- Balassa, B. (1965). Trade liberalization and “revealed” comparative advantage 1. *The Manchester school*, 33(2), 99 – 123.
- Boboc, D., Lădaru, G. R., & Diaconeasa, M. C. (2019). *Procesarea produselor agricole*. Editura ASE (p. 27 – 41).
- Breg, B., Tašner, L., & Fišer, J. (2006). Meslin-a forgotten cereal and its usage in baking. *Proceedings of 3rd International Congress 'Flour-Bread 05' and 5th Croatian Congress of Cereal Technologists, Opatija, 26 – 29 October 2005*. (p. 170 – 176).
- European Commission (2009), European Competitiveness Report 2008, *European Commission*, Brussels.
- FAOSTAT. (2024). <https://www.fao.org/faostat/en/#data/PP>. [Accessed on: July 01, 2024].
- International Trade Centre. (2024). <https://intracen.org/resources/data-and-analysis/trade-statistics>. [Accessed on: July 01, 2024].
- Latruffe, L. (2010), “Competitiveness, Productivity and Efficiency in the Agricultural and Agri-Food Sectors”, *OECD Food, Agriculture and Fisheries Working Papers*, No. 30, OECD Publishing. <http://dx.doi.org/10.1787/5km91nkdt6d6-en>
- Lee, J., & Karpova, E. (2018). Revisiting the competitiveness theory in the new global environment: review and analysis of the competitiveness definition. *International journal of competitiveness*, 1(3), 189 – 205.
- Manevska-Tasevska, G., & Rabinowicz, E. (2014). Competitiveness of Swedish agriculture: indicators and driving forces. *AgriFood Economics Centre, Lund*.
- Maslova, V., Zaruk, N., Fuchs, C., & Avdeev, M. (2019). Competitiveness of agricultural products in the Eurasian Economic Union. *Agriculture*, 9(3), 61.
- Mizik, T. (2021). Agri-food trade competitiveness: A review of the literature. *Sustainability*, 13(20), 11235.
- Mukhametgaliev, F., Sitdikova, L., Avkhadiev, F., Gainutdinov, I., & Petrova, V. (2020). *Problems of regional grain market development. In BIO Web of Conferences* (Vol. 17, p. 00082). EDP Sciences.
- Peneder, M. and Rammer, C. (2018), Measuring Competitiveness, *ZEW – Leibniz Centre for European Economic Research*, Vienna.
- Radu, L. (2019). The Bakery Sector of Romania – Present, Challenges and Perspectives in the Context of Increasing Competitiveness. *New Trends in Sustainable Business and Consumption*, 448.

- Statista. (June 18, 2024a). Bread and bakery consumption volume in Europe from 2019 to 2029, by category (in million kilograms) [Graph]. In Statista. Retrieved July 18, 2024, from <https://www.statista.com/statistics/806319/europe-bread-and-bakery-production-volume-by-category/>
- Statista. (June 18, 2024b). Per-capita volume sales in the bread & bakery products market worldwide, by country in 2023 (in kilograms) [Graph]. In Statista. Retrieved July 18, 2024, from <https://www.statista.com/forecasts/758721/per-capita-volume-sales-in-the-bread-and-bakery-products-market-worldwide-by-country>.
- Voinescu, R., & Moisoiu, C. (2015). Competitiveness, theoretical and policy approaches. Towards a more competitive EU. *Procedia Economics and Finance*, 22, 512 – 521.
- Yadav, A. K., & Chattopadhyay, U. (2024). Identifying the Factors of Export Competitiveness for Agricultural Products. *Asian Journal of Agricultural Extension, Economics & Sociology*, 42(6), 241 – 253.