IMPACT OF ROMANIA'S EU ACCESSION ON FOOD SECURITY

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Abstract
The purpose of this paper is to evaluate the impact that Romania's accession to the European Union had on food security. To this end, with the help of FAO indicators on food security, the levels in Romania will be analyzed compared to neighboring countries, both EU and non-EU members, with a view to ensuring food or energy consumption. Through these comparisons, differences can be observed, or not, in terms of ensuring physical access to food both before and after joining the union.

Keywords: European Union, food security, indicators, Romania
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Introduction

Food security is a multi-dimensional concept with a deep and expanded understanding to progressively cover a wide range of meanings, along with diversifying the food needs of households and individuals for a healthy life.
Food security is defined as a situation that exists when all people, at any time, have physical, social and economic access to enough, safe and nutritious foods that respond to their nutritional needs and preferences for an active and healthy life. Four indicators are used to measure food security, as follows: food availability, namely food in sufficient quantities and of adequate quality, which are available to individuals or households through domestic production or international trade, the use of food by diet adequate food to ensure that all physiological needs are met, access food, with physical and economic access by people to adequate resources for the purchase of food suitable for a nutritious diet and the stability of adequate food in stable quantity, quality and price in any moment, which are accessible to households or individuals. (Zhu, 2016)

1. Literature review

The definition of food security is an ambitious and difficult to measure concept. In addition, the concept of food security is linked to some complex concepts such as insecurity, nutrition, hunger, malnutrition, malnutrition and obesity. Therefore, given this complexity, the proper measurement of food security is important for the delimitation of actions and initiatives to manage food and economic aid, nutrition and health assessment. (Abbade, 2017)
Food security is set to become one of the dominant factors that define our future existence, such as the supply of food and water and begins to struggle to meet our growing consumer needs. (Irani, 2016)
The issue of food security has attracted so much attention because food security can greatly affect the social stability of a nation and ultimately the course of economic development.

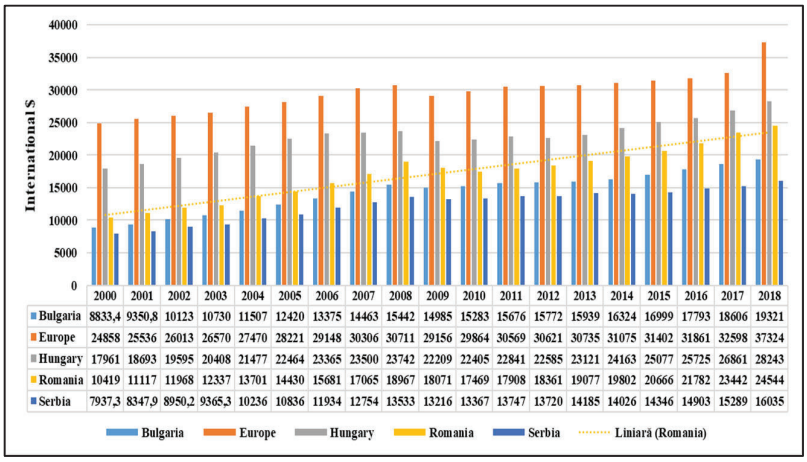
Food has distinctive characteristics; it has an immediate appeal to deep-rooted human feelings, because food is a matter of life and death. (Zhou, 2010)
Food security is a growing concern in the world, especially in developing countries. (Yahaya, 2018)

2. Material and method

The present paper aims to assess the food security in Romania, as well as to analyze the impact of accession to the European Union on food security. For this purpose, food security indicators provided by the FAO statistics site will be analyzed quantitatively and qualitatively, in order to determine food security, both in Romania and in some neighboring countries, either member. or non-EU members.
Among the indicators analyzed on the FAO site we mention: Average dietary energy supply adequacy, average value of food production, percentage of population using at least basic drinking water services, cereal import dependency ratio.

3. Results and discussions

In order to determine the current level and the evolution of the food security layer in Romania, and not only, the indicators presented above, for the period 2000-2018, were analyzed in order to observe the differences between the pre-accession period and the post-accession period in the European Union, in the case of Romania, the year 2007.
Following this analysis of the alignment security indicators, it will be possible to compare its status in Romania with other neighboring countries, members and non-members of the EU, in order to determine the impact that accession has had in this area.

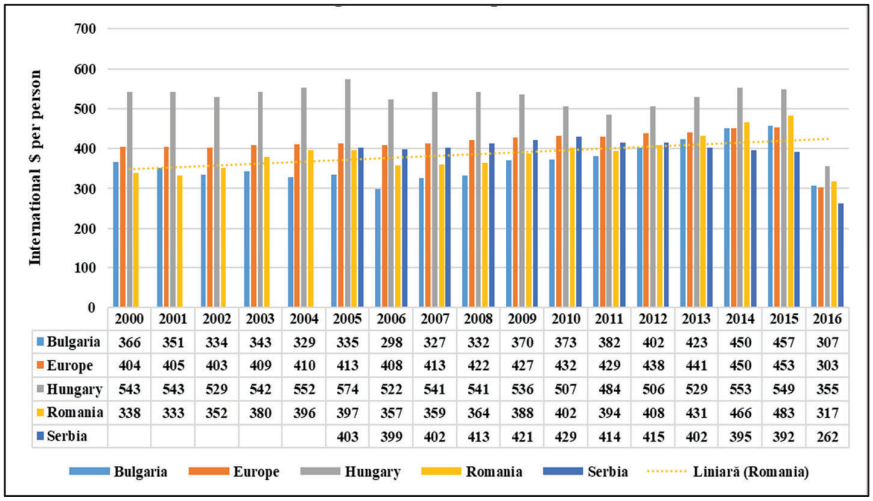


	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Bulgaria	8833,4	9350,8	10123	10730	11507	12420	13375	14463	15442	14985	15283	15676	15772	15939	16324	16999	17793	18606	19321
Europe	24858	25536	26013	26570	27470	28221	29148	30306	30711	29156	29864	30569	30621	30735	31075	31402	31861	32598	37324
Hungary	17961	18693	19595	20408	21477	22464	23365	23500	23742	22209	22405	22841	22585	23121	24163	25077	25725	26861	28243
Romania	10419	11117	11968	12337	13701	14430	15681	17065	18967	18071	17469	17908	18361	19077	19802	20666	21782	23442	24544
Serbia	7937,3	8347,9	8950,2	9365,3	10236	10836	11934	12754	13533	13216	13367	13747	13720	14185	14026	14346	14903	15289	16035

Figure 1. Evolution of Gross Domestic Product per capita
Source: own processing based on FAOStat data

Figure 1 shows the evolution of GDP per capita, both in Romania and in its neighboring countries, whether they are EU members or not. It can be observed that during the analyzed period (2000-2018) there is an increase of the GDP value per inhabitant in all the countries studied. Of these, the highest average annual growth is recorded in Romania, being 4.87%,

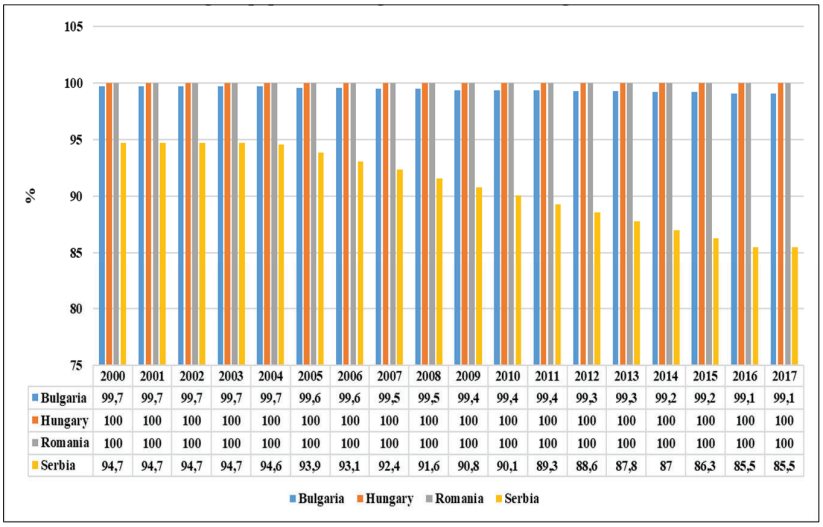
followed by Bulgaria with 4.44% and Serbia with 3.98%. Hungary has an annual average increase compared to the EU average (2.28%). Although Romania and Bulgaria have the most significant annual average increases, GDP per capita in these two nations has significant oscillations, with coefficients of variation of 21-22%.
In the case of Romania, (but also of Bulgaria, because we have only one EU accession treaty), an average of GDP per capita was achieved in the pre-accession period (12,800 international dollars) and an average in the post-accession period (19,760 international dollars), by the way, comparing these two averages it can be seen that the value of GDP per inhabitant increased by 54%, (and by 50% in the case of Bulgaria).



	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Bulgaria	366	351	334	343	329	335	298	327	332	370	373	382	402	423	450	457	307
Europe	404	405	403	409	410	413	408	413	422	427	432	429	438	441	450	453	303
Hungary	543	543	529	542	552	574	522	541	541	536	507	484	506	529	553	549	355
Romania	338	333	352	380	396	397	357	359	364	388	402	394	408	431	466	483	317
Serbia						403	399	402	413	421	429	414	415	402	395	392	262

Figure 2. Evolution of average value of food production
Source: own processing based on FAOStat data

Figure 2 shows the evolution of the value of average food production in the same countries (and the average of Europe) over the same time period.
In the case of Romania it can be appreciated that the evolution of the average value of the food production is somewhat constant, registering an average growth rate of only 0.2% per year, the average of the period being 386 international grievances per person.
Although the trend is slightly increasing in Romania, in the analyzed period, in the rest of the countries / areas, the trend is slightly decreasing. The most significant downward trend is recorded in Hungary, with an average annual rate of -2.6%, but this country also has the highest average value per capita of food production, on average 523 international dollars.
At the level of Europe, an average value of production of 415 international dollars is registered, at the same time registering the smallest variation of 8%.
However, Romania is on the penultimate place in the countries / regions analyzed, comparing between the pre-accession period in the EU (when the average value of food production was $ 364 I) and the post-accession period (the value of food production was 401 I $), there is a 10% increase in the value of food production.
Figure 3 shows the evolutions of the population weights that have access to the drinking water service, Romania and the neighboring countries.



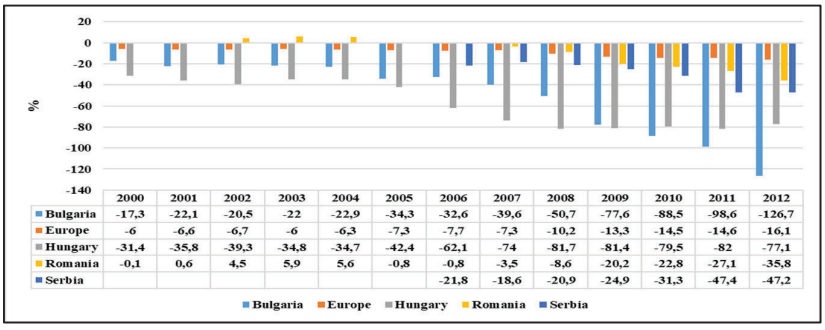
	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Bulgaria	99,7	99,7	99,7	99,7	99,7	99,6	99,6	99,5	99,5	99,4	99,4	99,4	99,3	99,3	99,2	99,2	99,1	99,1
Hungary	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Romania	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Serbia	94,7	94,7	94,7	94,7	94,6	93,9	93,1	92,4	91,6	90,8	90,1	89,3	88,6	87,8	87	86,3	85,5	85,5

Figure 3. Evolution of percentage of population using at least basic drinking water services

Source: own processing based on FAOStat data

As can be seen, during the analyzed period (2000-2017) both in Romania and in Hungary, the population's share of the drinking water service is insured at 100%. In Bulgaria there is an average weight over the whole period of 99.45%, but it can be seen that this weight is decreasing, registering an annual average rate of -0.03%, and between the pre-accession period and the post-accession period, Bulgaria, a decrease of 0.36% of the population with access to drinking water service.

In Serbia, as can be seen from figure 3, there is a significant decrease of people with access to drinking water, from 94.7% (in 2000) to 85.5% (in 2017), representing an average annual decrease of 0.6%.

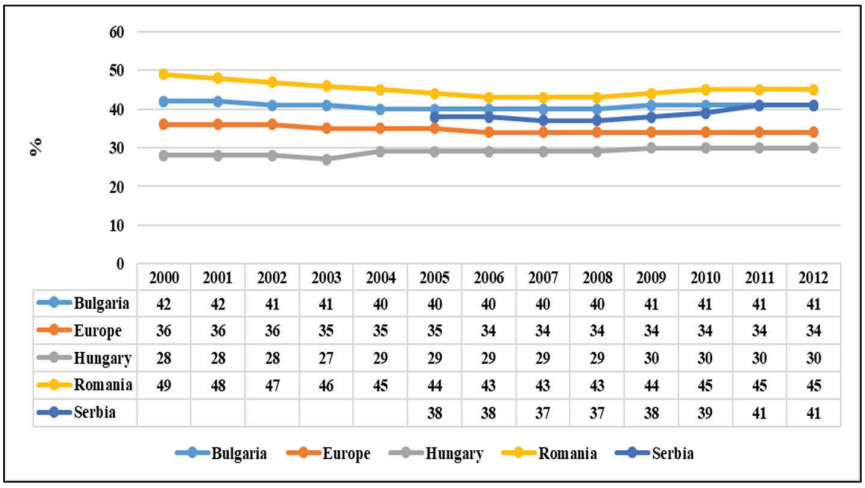


	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Bulgaria	-17,3	-22,1	-20,5	-22	-22,9	-34,3	-32,6	-39,6	-50,7	-77,6	-88,5	-98,6	-126,7
Europe	-6	-6,6	-6,7	-6	-6,3	-7,3	-7,7	-7,3	-10,2	-13,3	-14,5	-14,6	-16,1
Hungary	-31,4	-35,8	-39,3	-34,8	-34,7	-42,4	-62,1	-74	-81,7	-81,4	-79,5	-82	-77,1
Romania	-0,1	0,6	4,5	5,9	5,6	-0,8	-0,8	-3,5	-8,6	-20,2	-22,8	-27,1	-35,8
Serbia							-21,8	-18,6	-20,9	-24,9	-31,3	-47,4	-47,2

Figure 4. Evolution of cereal import dependency ratio

Source: own processing based on FAOStat data

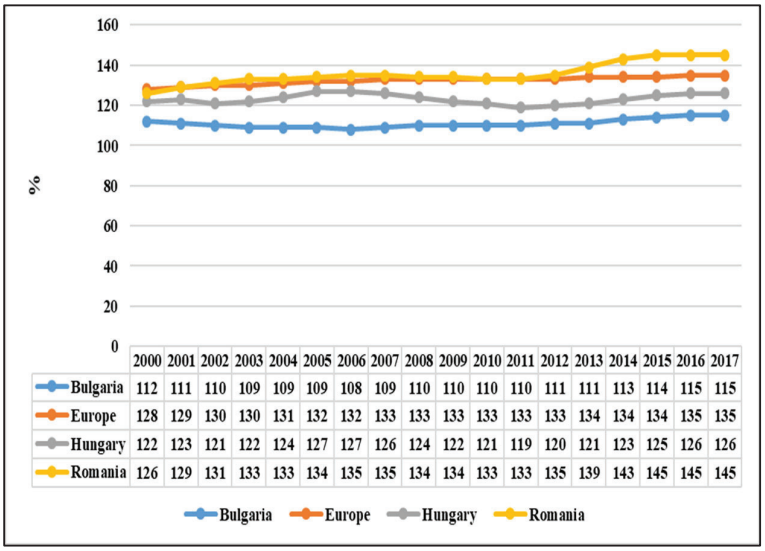
Figure 4 shows the evolution of the indicator "Dependence on the import of cereals", from Romania, neighboring countries and Europe. The higher this indicator (positive), the greater the country's dependence on cereal imports. Ion (2017)
As can be seen from Figure 4, all countries report a report of the dependence on negative cereals, during the period analyzed, which means that they are independent of the import of cereals. It is worth mentioning that in the period 2002-2004 Romania recorded positive values, thus, Romania being dependent on the cereal impotence in that period in a proportion of 0.6-5.9%.



	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Bulgaria	42	42	41	41	40	40	40	40	40	41	41	41	41
Europe	36	36	36	35	35	35	34	34	34	34	34	34	34
Hungary	28	28	28	27	29	29	29	29	29	30	30	30	30
Romania	49	48	47	46	45	44	43	43	43	44	45	45	45
Serbia						38	38	37	37	38	39	41	41

Figure 5. Evolution of share of dietary energy supply derived from cereals, roots and tubers
Source: own processing based on FAOStat data

Figure 5 shows the share of energy from cereals, roots and tubers, in total alienation energy. Thus, it can be observed that in Romania, the share of these product groups in the total energy is the highest, on average, being 45.15%. It should be mentioned that during this 13-year period, this share is decreasing from 49% (in 2000) to 45% (in 2012, the last year of statistics for this indicator). In the second place is Bulgaria, with an average weight of 40%. And the most favorable place, from the countries analyzed, is occupied by Hungary, with a share of energy from cereals, roots and tubers of 28.9%.
At the European level, there is an average share of energy from these product groups of 34.7%.
Analyzing according to 2007 (the year of Romania's accession to the EU) it can be observed that the average from the previous period was 46%, and the average from the subsequent period this year was 44%, representing a decrease by 4%; whereas in Bulgaria, this decrease was 0.47% per day.
Figure 6 shows the evolution of the "average dietary energy supply adequacy" indicator, which shows, from our point of view, the best state of security in an area or region. Thus, it can show us whether in that country / region, energy consumption is assured, and to what extent. Similar to the other indicators, it was analyzed for the period 2000-2017, for the countries Romania, Bulgaria, Hungary, but also at the level of the whole continent.



	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Bulgaria	112	111	110	109	109	109	108	109	110	110	110	110	111	111	113	114	115	115
Europe	128	129	130	130	131	132	132	133	133	133	133	133	133	134	134	134	135	135
Hungary	122	123	121	122	124	127	127	126	124	122	121	119	120	121	123	125	126	126
Romania	126	129	131	133	133	134	135	135	134	134	133	133	135	139	143	145	145	145

Figure 6. Evolution of average dietary energy supply adequacy
Source: own processing based on FAOStat data

As can be seen, in Romania the assurance of the heretic availability is the highest, registering an average weight during the analyzed period, of 135.6%. By weight, Europe ranks second with an average of 132% guaranteed energy availability. On the third place is Hungary with a percentage of energy insurance of 123%, and on the fourth and fifth places are Bucharest (with 110%) and Serbia (with 109%).
Analyzing according to the two predetermined periods, pre and post accession it can be seen that, in Romania, the share of energy availability increased in the post-accession period by 5%, if the average for the period 2000-2006 was 131%, in the period 2007-2017 the average availability of energy availability was 138%.

Conclusions

Following the analysis of GDP per capita, it can be stated that the largest average annual growth is registered in Romania, and during the period of accession to the European Union, a GDP per capita was registered with 54% higher than in the previous period.
Also analyzing the value of food production per inhabitant, Romania is the only country, from the analyzed ones where there is a slight growth trend, in the rest of the analyzed countries, the trend is slightly decreasing. Analyzing similarly, between the two periods, it is found that after joining the EU, the average value of food production is 10% higher than the previous period.
Analyzing the assurance of energy availability, it was found that Romania provides these availabilities, and registers a rather large surplus, reaching a national average of 135%. Analyzing between periods can be observed in the post-accession period to the EU, the average energy availability was higher by 5%. However, we must not unite the fact that a good portion of these availability (45%) are provided by the product category "cereals, roots and tubers", so this indicator can take some information and about the quality of the diet.

However, however, given that after joining the EU, the availability has increased, and the share of the energy value from cereals, radishes and tubers has decreased, as we can see an improvement in the quality of the diet in Romania.

References

1. Abbade, E. (2017), Availability, access and utilization, *World Journal of Science, Technology and Sustainable Development*, 14(4), 322-335. https://doi.org/10.1108/WJSTSD-05-2016-0033
2. Ion, R.A. (2017). Securitatea și siguranța alimentară. *Colecția Economie Agrară,* Editura ASE, București.
3. Irani, Z. and Sharif, A. (2016), Sustainable food security futures, *Journal of Enterprise Information Management,* 29(2), 171-178. https://doi.org/10.1108/JEIM-12-2015-0117
4. Yahaya, I., Pokharel, K., Alidu, A. and Yamoah, F. (2018), Sustainable agricultural intensification practices and rural food security, *British Food Journal*, 120(2), 468-482. https://doi.org/10.1108/BFJ-01-2017-0021
5. Zhou, Z. (2010), Achieving food security in China: past three decades and beyond, *China Agricultural Economic Review*, 2(3), 251-275. https://doi.org/10.1108/17561371011078417
6. Zhu, Y. (2016), International trade and food security: conceptual discussion, WTO and the case of China, *China Agricultural Economic Review*, 8(3), 399-411. https://doi.org/10.1108/CAER-09-2015-0127