

**Camelia GAVRILESCU<sup>1</sup>**

*<sup>1</sup>Institute of Agricultural Economics, Romanian Academy, Bucharest  
cami\_gavrilescu@yahoo.com*

## ROMANIAN VEGETABLES – A TRADE BALANCE ANALYSIS

### ABSTRACT

In the post-accession period, along with the repositioning of various crops and expansion of cereals and oilseeds production, areas under vegetables and potatoes and their respective productions decreased. Nevertheless, demand increased in quantities, as well as in quality and diversity, and the result was a significant increase in imports. The present paper makes a detailed analysis of the main trends of trade flows in vegetables and potatoes, in terms of values, quantities, prices, directions and composition. The results show a significant increase in the share of imports in the consumption availabilities of agri-food products, along with an increase of trade deficit for almost all kinds of vegetables.

**Key words:** vegetable trade, potato trade, Romania, trade balance, self-sufficiency ratio.

JEL Classification: Q17

### 1. INTRODUCTION

Romania has good soil and climate conditions for producing vegetables. Although they thrive in soils with high natural water and nutrients supply (traditionally in river meadows), vegetables grown in open field can use a variety of soils, medium to even light-sandy (provided with appropriate intake of organic matter and water), but in order to obtain high yields and good quality products, commercial vegetable farms need irrigation facilities. Soil and climate conditions can be even better controlled in plastic tunnels and glasshouses.

Vegetables can make good use of small plots of land; therefore, they are currently found in most kitchen gardens and contribute to family on-farm supply.

Before 1990, vegetable production covered the domestic demand, and surplus was exported to Russia (USSR at that time) and to countries in the European Community (EC) (Gavrilescu, 2016). Romanian exports to the EC decreased significantly after Spain and Portugal (important vegetable producers) joined the EC in 1986, and the principle of community preference applied.

The important changes that occurred in the transition period (1990–1999) fractured the previously existing supply chains. When the former cooperative and

state farms were dismantled, split or privatised, the large farms that produced vegetables on industrial scale disappeared, and vegetable growing moved to small and very small private farms. Due to the lack of concentrated supply, the large storage facilities disappeared; the processing units were privatised and/or closed.

The larger farms that were subsequently established cultivated mainly cereals and oilseeds due to less demanding technologies in terms of inputs and labour, as compared to commercial vegetable growing. Sales of domestically produced vegetables moved to wet markets (in urban areas) and to periodical local markets and fairs in rural areas.

Farmers' reluctance to get associated resulted in a prolonged atomisation of supply. Small farmers are reluctant to participate in retail chains; they prefer to sell individually due to several constraints: high entry costs, scale factors and even price mechanisms (Alboiu, 2018).

Despite a rather large and diversified domestic production of vegetables, the lack of supply concentration prevented the modern retail (mostly transnational companies) that entered the Romanian market since late 1990's to buy local products, due to high transaction costs. Consequently, their supply of fresh vegetables to urban consumers came mostly from imports, which increased over time; and since exports were low, the result was a continuous negative trade balance for the whole group and subgroups of vegetables.

## 2. LITERATURE REVIEW

There is a high potential in Romania for producing various types of vegetables, such as tomatoes, peppers, cucumbers, eggplants, onion, garlic, cabbages, cauliflowers, green beans and peas, edible roots (carrots, parsley, parsnip, celery), mushrooms, etc., both in open field and in protected areas (under plastic tunnels and glasshouses) (Popescu et al., 2022). In the last two decades, domestic production proved to be insufficient to meet the demand, therefore imports were needed, especially in extra season.

However, the yearly self-sufficiency ratios (calculated by the Romanian National Institute of Statistics) for the post-accession period were higher than 100% only for cabbages, and in a few selected years for potatoes. All the other vegetables types, as well as the total vegetable indicator did not reach complete ~~full~~ self-sufficiency (NIS, 2023).

In terms of quantitative shares, Romania's production of vegetables was dominated by cabbages (27.5%), tomatoes (19.9%) and onions (9.9%), while edible roots and peppers took 6.4% and 6.3% respectively (2017–2022 averages).

In the EU, the top vegetable producers are Spain, Italy, Netherlands, France, Poland; these countries also have high consumption (close to 200 kg/capita/year)

(Soare & Chiurciu, 2021), while average consumption in Romania varied in the post-accession period from 150 kg/capita/year in 2007 to 180 kg/capita/year in 2021.

The top three producer countries accounted for 44% of total world potato production in 2019: these were China (91.8 million tonnes = 25%), India (50.2 million tonnes = 14%) and Russia (22.4 million tonnes, 6% of the world potato production) (FAO, 2022).

On the consumer side, the current nutrition science considers that a high share and quantity of vegetables and fruit in the daily diet is a premise of healthy living and an indicator of a good living standard. On the producer side, vegetable farming is associated with economic, social and environmental benefits: it is highly efficient and profitable, it requires more labour than other agricultural activities, thus providing a large number of jobs all year round, while the demand for organic vegetables has constantly increased (Soare et al., 2021).

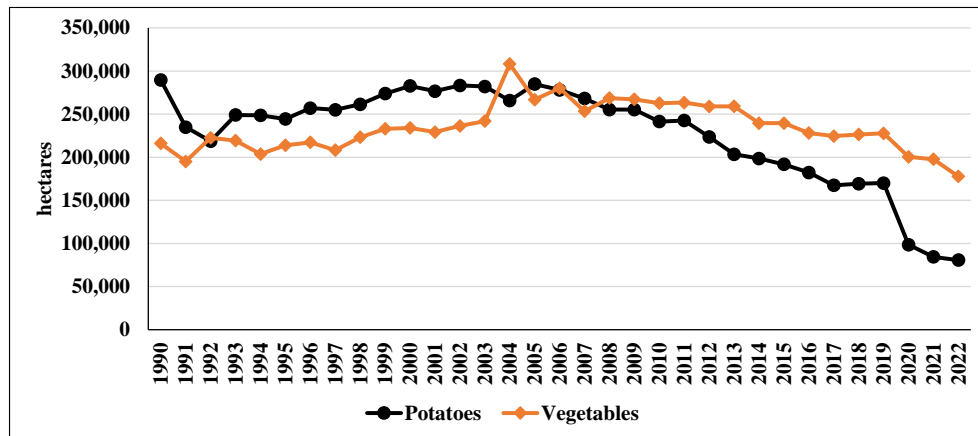
### 3. MATERIAL AND METHOD

The data needed for analysing the dynamics of exports, imports, trade balances, and directions and composition of the Romanian trade with vegetables and potatoes were extracted from Eurostat trade database (Comext, 2023) and Tempo-online database (NIS, 2023). The Combined Nomenclature (CN) was used to analyse information for various kinds of vegetables, going into detail down to 4–6 digits of the Harmonized System (HS), where necessary for specific products (e.g. HS0701=potatoes, HS0702=tomatoes, HS070310=onions, HS070320=garlic, HS070930=eggplants, HS070960=peppers). Other sources of statistical data such as yearly NIS publications on consumption and self-sufficiency ratios were also used.

### 4. RESULTS AND DISCUSSIONS

The areas under potatoes and vegetables varied over time (Figure 1).

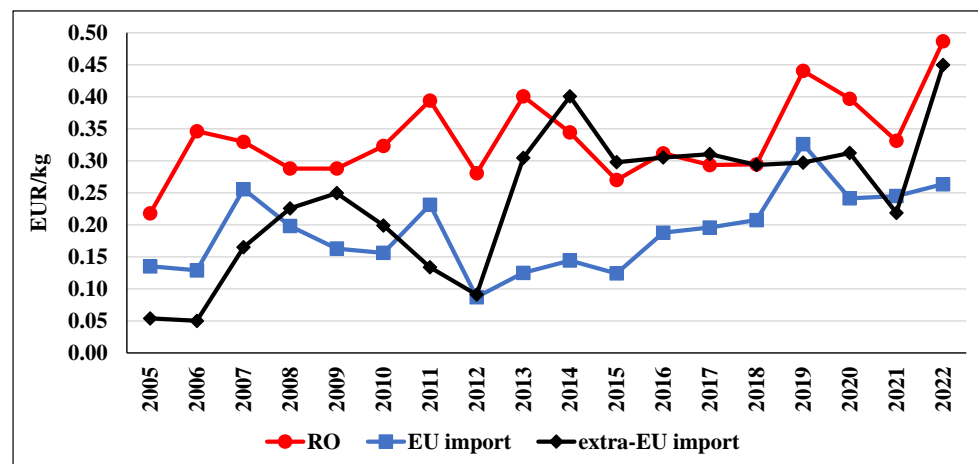
The areas under potatoes varied from 220 to 290 thousand hectares in the transition period (1990–1999) and the pre-accession period (2000–2006), with a slight upward trend, but declined strongly and continuously after accession, to reach a minimum of 80 thousand hectares in 2022 (-72% in 2022/1990 and -70% in 2022/2007). Several causes were at work: increasing quantities of cheaper potatoes imported from Germany, France, Poland and Netherlands; decline of areas under seed potatoes, with increased cheaper imports from Netherlands and Germany; disappearance of storage facilities, which were destroyed or changed their destination (for other goods).



Source: National Institute of Statistics (NIS), Tempo-online, 2023

Figure 1. Total areas under potatoes and vegetables (1990–2022)

Prices for potatoes imported from the EU countries were by 26–69% lower than Romanian farmgate prices. Prices for potatoes imported from extra-EU varied widely, but were lower than domestic prices, except for a few years (2014–2017) (Figure 2).



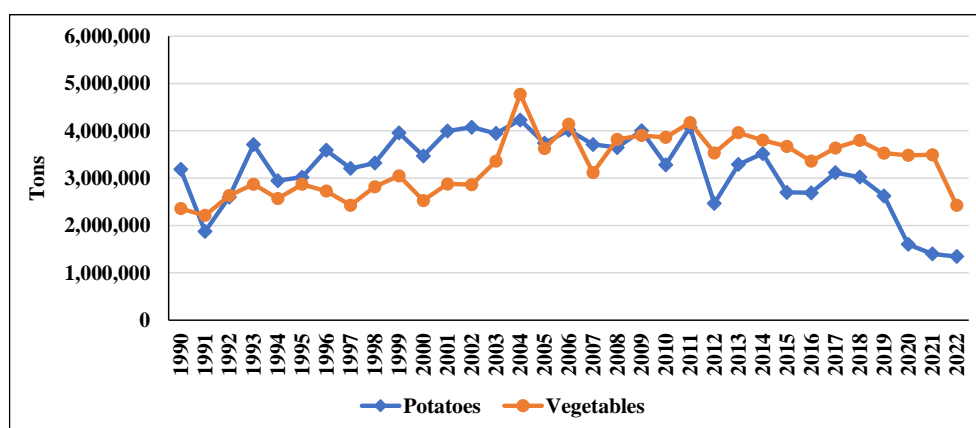
Source: Author's calculations based on data from NIS, Eurostat and National Bank of Romania (2023)

Figure 2. Potato prices (2005–2022)

The areas under vegetables increased until 2004, then took a slight downward trend, down to 178 thousand hectares in 2022 (-18% in 2022/1990 and -30% in 2022/2007). Although far lower than in Spain, Portugal and Netherlands, Romanian areas under vegetables grown under plastic tunnels and glasshouses

doubled between 2007 and 2016, accounting for 1.4–4.5% of the total area under vegetables, with a peak of 4,500 ha in 2018.

Production in both potatoes and vegetables increased until 2004 (with a peak production of 4.2 million tonnes in potatoes and 4.8 million tonnes in vegetables); subsequently productions decreased to reach the lowest quantities in 2022 (-68% for potatoes, down to 1.4 million tonnes, and -49% for vegetables, down to 2.4 million tonnes) (Figure 3). Within these general trends, the values were rather variable, with interim ups and downs, for both potatoes and vegetables, due to high dependency on weather conditions (especially drought, such as the very severe drought in 1991 and 2012).



Source: NIS, Tempo-online, 2023

Figure 3. Total production of potatoes and vegetables (1990–2022)

Potato consumption varied in the post-accession period from 92.2 to 104.7 kg/capita/year, while the consumption of vegetables varied from 148.7 to 180.2 kg/capita/year. Nevertheless, the variability of self-sufficiency ratio (measured by standard deviation) is almost three times higher for potatoes than for vegetables (Table 1).

Although the share of imports in the consumption availabilities of agri-food products increased almost constantly for both potatoes and vegetables after 2011, and doubled from 2012 to 2022, the largest part of the Romanian production is consumed domestically.

Given that production had an overall declining trend in the consumption availabilities of agri-food products, the share of imports showed an ascending trend for most groups of products (Popescu, 2022). The average share of imports in the consumption availabilities (2017–2022) is the highest for tomatoes (36.5%), 31.9% for edible roots, 22% for onions, 21% for total vegetables and 19% for potatoes.

The share of vegetables in agri-food exports halved during the pre-accession period (Figure 4); after accession it ranged from 1 to 2%.

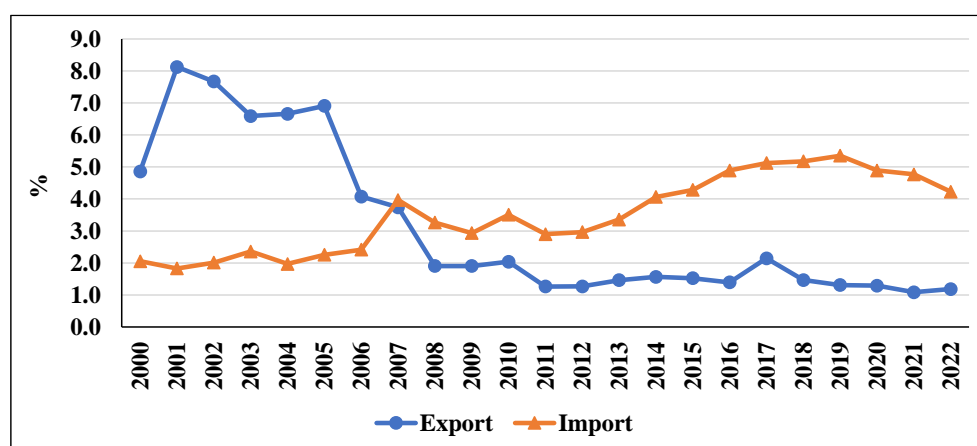
Table 1

Consumption indicators for potatoes and vegetables

Year	Potatoes			Vegetables and vegetable products (in fresh vegetable equivalent)		
	Consumption /capita/year	Self-sufficiency ratio	Import /consumption availabilities of agri-food products ratio	Consumption /capita/year	Self-sufficiency ratio	Import /consumption availabilities of agri-food products ratio
2006	99.2	97.9	6.5	158.6	92.2	9.3
2007	99.1	91.2	3.8	149.9	78.6	12.1
2008	104.2	95.4	4.8	158.9	88.2	10.9
2009	98.1	107.8	4.3	148.7	93.1	10.5
2010	103.9	89.9	4.6	155.7	89.8	11.9
2011	103.3	109.3	6.2	162.9	93.4	10.9
2012	104.7	77.2	10.2	151.4	87.1	12.0
2013	103.0	92.2	8.7	152.0	90.8	11.0
2014	100.8	106.3	8.1	158.0	91.3	13.1
2015	98.3	87.3	9.1	158.5	88.2	15.2
2016	95.5	90.4	12.5	155.8	85.3	18.1
2017	96.6	100.3	11.1	162.1	90.9	17.7
2018	95.4	99.0	13.3	173.4	86.7	18.4
2019	92.2	90.8	18.5	170.2	84.3	19.4
2020	93.4	64.8	18.5	175.0	81.6	20.6
2021	98.1	57.5	25.4	180.2	82.0	21.3
2022	97.7	56.0	26.7	156.0	70.1	26.0
<i>St dev</i>	3.71	15.80	6.90	8.93	5.86	4.67

Note: St dev = standard deviation

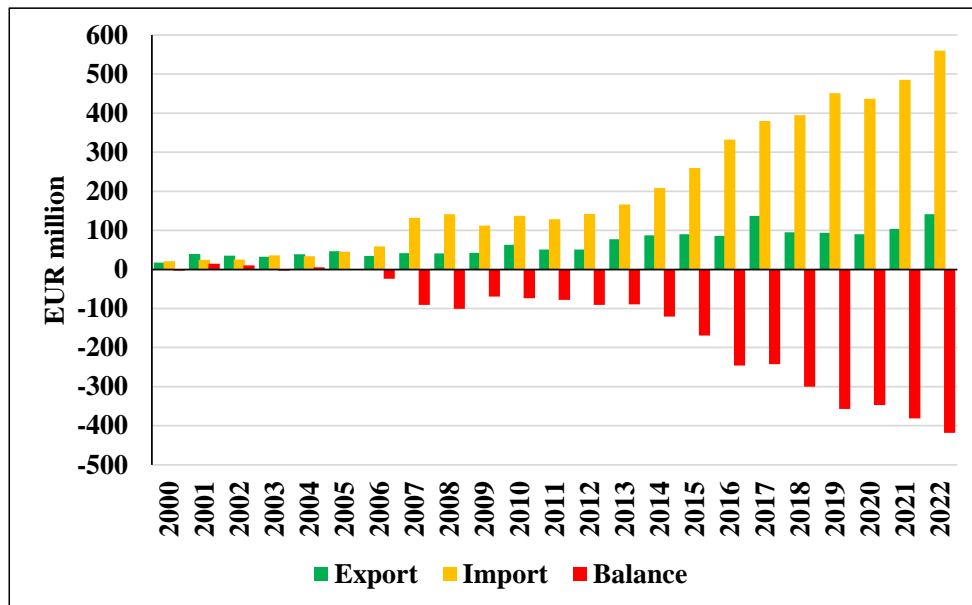
Source: NIS, Population consumption availabilities (2006-2022), Tempo-online, author's calculations



Source: Author's calculations based on Eurostat data

Figure 4. Share of vegetables in total agri-food trade

The share of vegetables in total agri-food imports had an ascending trend in both pre- and post-accession period until 2019, to slightly drop in the last three years, despite a steady increase in value and quantities in nominal terms (Figure 5).

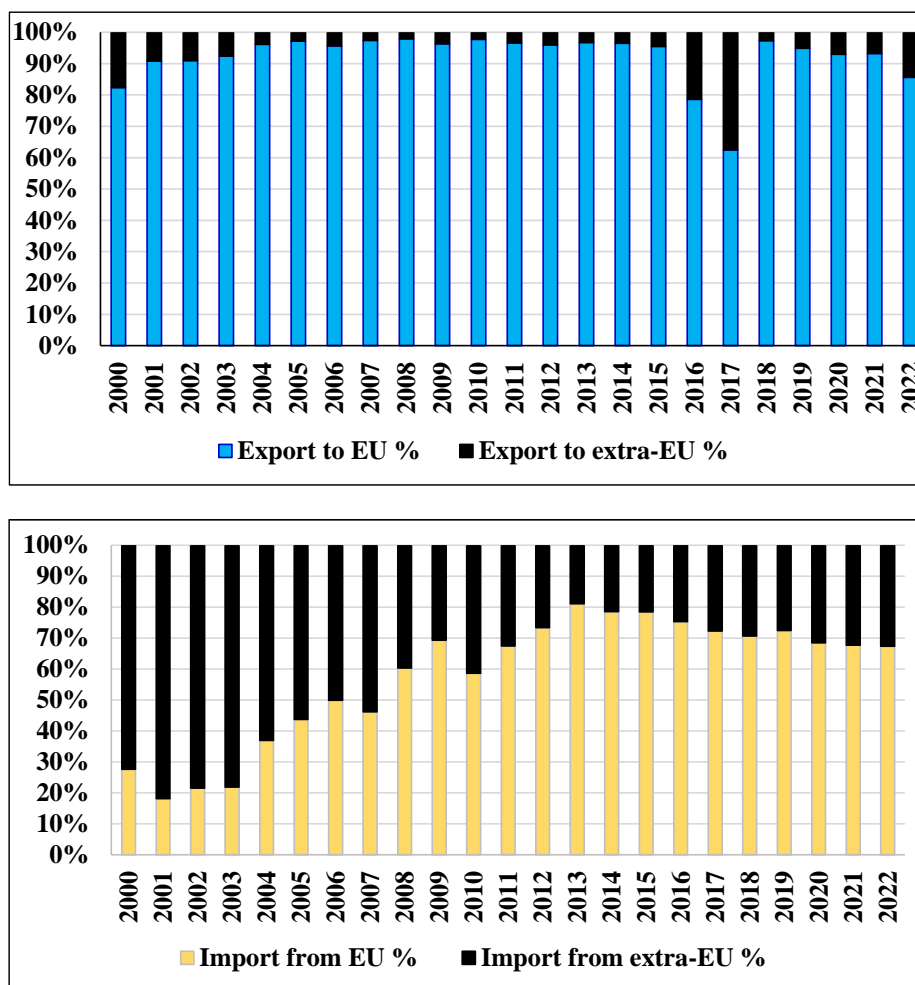


Source: Author's calculations based on Eurostat data

Figure 5. Trade in vegetables (potatoes excluded)

Potato exports were very low, both in the pre- and post-accession period (worth between EUR 50,000 and maximum 3.8 million). Imports increased sharply in the post-accession period, by a factor of 5 between 2007 and 2022, reaching EUR 60 million in 2022. The result was a potato trade balance deficit throughout the analysed period, with high values in the post-accession period (from EUR -12 to -64 million).

In the pre-accession period, vegetable exports were mainly directed to the EU countries (over 80%), while most imports (over 50%) originated from extra-EU countries (mainly from Turkey and Moldova). After accession, exports remained directed to EU countries, but imports shifted to originate from EU countries as well (50–80%), as the principle of community preference applied (Figure 6).



Source: Author's calculations based on Eurostat data

Figure 6. Orientation of vegetable export and import flows by main destinations / origins

As opposed to vegetable exports, potato exports were directed primarily (over 90%) to extra-EU destinations in the pre-accession period. After accession, exports to the EU were highly variable, to stabilise around 30% in the last few years. Imports originated mainly from the EU (over 60% in the pre-accession period), to reach over 85% after accession.



Table 2

Top 5 countries of origin for vegetables and potato imports from the EU

Vegetables						
Rank	2000–2006 average			2017–2022 average		
	Partner	1000 tonnes	%	Partner	1000 tonnes	%
	<b>Total</b>	<b>158.77</b>	<b>100.0</b>	<b>Total</b>	<b>512.63</b>	<b>100.0</b>
1	Turkey	48.77	30.7	Turkey	101.59	19.8
2	Poland	25.93	16.3	Netherlands	63.53	12.4
3	China	16.95	10.7	Poland	60.69	11.8
4	Netherlands	12.21	7.7	Germany	41.76	8.1
5	Syria	12.04	7.6	Hungary	31.44	6.1
	<b>Top 5</b>	<b>115.91</b>	<b>73.0</b>	<b>Top 5</b>	<b>299.01</b>	<b>58.3</b>
Potatoes						
Rank	2000–2006 average			2017–2022 average		
	Partner	1000 tonnes	%	Partner	1000 tonnes	%
	<b>Total</b>	<b>53.65</b>	<b>100.0</b>	<b>Total</b>	<b>168.50</b>	<b>100.0</b>
1	Germany	6.33	11.8	France	42.43	25.2
2	Netherlands	6.15	11.5	Germany	31.48	18.7
3	Austria	4.89	9.1	Poland	28.54	16.9
4	Egypt	4.10	7.6	Netherlands	21.84	13.0
5	Serbia and Montenegro	3.69	6.9	Greece	20.30	12.0
	<b>Top 5</b>	<b>25.16</b>	<b>46.9</b>	<b>Top5</b>	<b>144.58</b>	<b>85.8</b>

Source: Author's calculations based on Eurostat data

In the pre-accession period, vegetables were imported mainly from Turkey, Poland and China. In 2017–2022, Romania imported vegetable quantities 3.2 times larger than in 2000–2006; Turkey kept its leader position (while doubling the quantities exported to Romania), followed by Netherlands and Poland. The concentration ratio CR5 decreased in 2017–2022 to 58%, showing that the origins of vegetables diversified (Table 2).

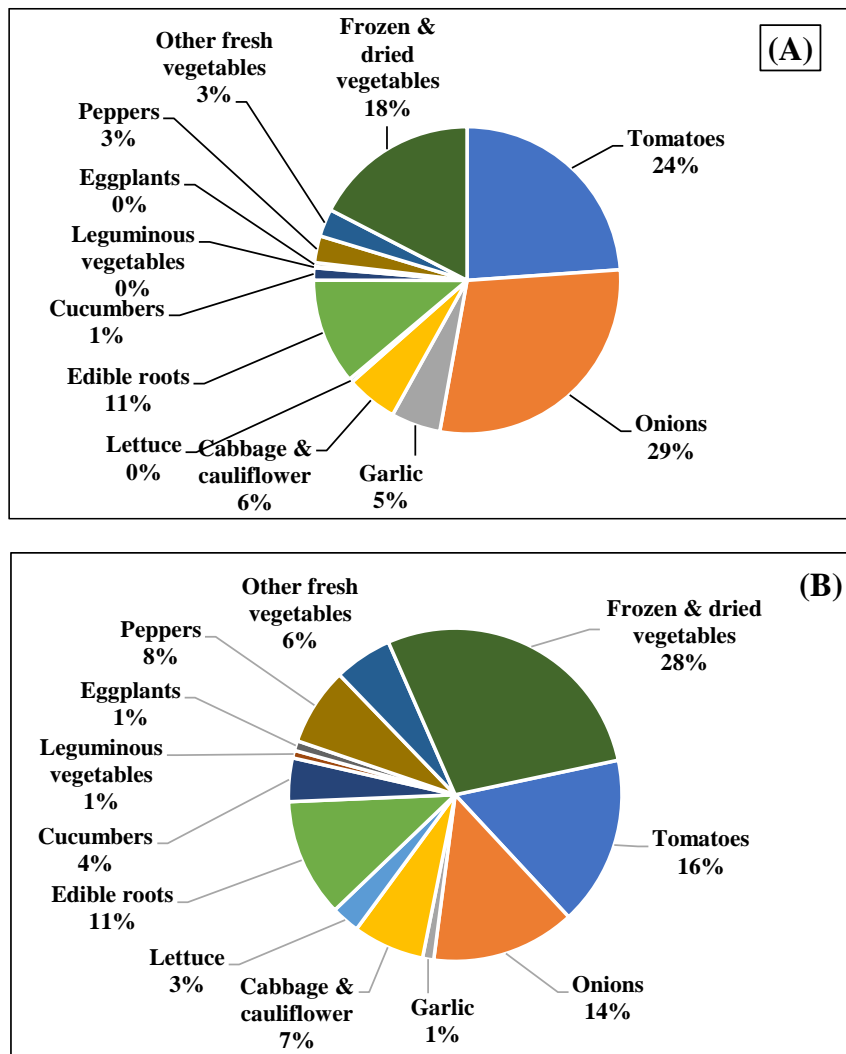
In 2017–2022, Romania imported potato quantities 3.1 times larger than in 2000–2006; France, Germany and Poland became the main potato suppliers; as opposed to vegetables, CR5 increased to about 86%, indicating a low diversification of origin countries after accession.

In the pre-accession period, in terms of quantities, 71% of imported vegetables were onions (29%), tomatoes (24%) and frozen & dried vegetables (18%), followed by edible roots, cabbages & cauliflowers and garlic (Figure 7A).

The structural composition of vegetable imports changed in the last years (2017–2022): the share of onions halved, tomatoes went down by 8%, garlic by 4%, while frozen & dried vegetables gained 10% in share (Figure 7B).

Nevertheless, the imported quantities sharply increased after accession. This is true even for tomatoes and garlic, for which a de minimis support has been

implemented since 2017 (for tomatoes under plastic tunnels and glasshouses) and 2019 respectively (for garlic). Support will be also available in 2023–2024 for other vegetables grown under plastic tunnels and glasshouses: peppers, cucumbers, green beans, lettuce, spinach and green onions (scallions). The support aims at increasing the supply of domestically produced early and late vegetables (from plastic tunnels and glasshouses) and reducing imports.



Source: Author's calculations based on Eurostat data

Figure 7. Structure of vegetables imports: (A) 2000–2006 average; (B) 2017–2022 average

Over time, both imported values and quantities increased (Table 3). For some groups, there is a 2-digit multiplying factor for import values (the highest are for leguminous vegetables, lettuce, cucumbers and peppers), while in quantity terms, the multiplying factors are 2-digit for only a few products (leguminous vegetables, lettuce and cucumbers).

Table 3

Structure of vegetables imports

Item	Import values					Import quantities				
	EUR million				T3/T0	Tonnes				T3/T0
	T0	T1	T2	T3		T0	T1	T2	T3	
Tomatoes	14.14	83.04	91.89	203.25	14.4	75.88	114.97	110.44	168.40	2.2
Onions	11.41	13.60	20.66	53.08	4.7	91.94	70.28	88.92	143.22	1.6
Garlic	5.13	3.96	12.88	21.61	4.2	16.54	5.62	7.04	11.11	0.7
Cabbage & cauliflower	1.98	7.12	17.93	39.29	19.8	17.23	34.01	49.38	71.12	4.1
Lettuce	0.65	7.51	17.32	34.40	52.8	1.26	7.78	18.29	28.31	22.5
Edible roots	5.40	15.91	27.86	59.05	10.9	35.39	71.96	72.41	117.83	3.3
Cucumbers	0.84	11.69	17.85	44.06	52.5	4.10	16.75	22.48	43.33	10.6
Leguminous vegetables	0.10	2.00	4.83	5.63	58.5	0.46	3.06	7.38	7.56	16.6
Eggplants	0.44	2.63	4.33	9.67	21.9	1.29	4.30	6.04	9.77	7.6
Peppers	2.39	15.16	45.08	113.51	47.5	8.93	31.23	40.82	77.34	8.7
Other fresh vegetables	2.74	24.51	58.09	85.11	31.0	9.23	22.68	32.61	57.91	6.3
Frozen & dried vegetables	24.65	73.79	124.41	234.13	9.5	55.31	128.80	181.42	289.38	5.2

Notes: T0 = 2000–2006 average; T1 = 2007–2011 average; T2 = 2012–2016 average; T3 = 2017–2022 average

Source: Author's calculations based on Eurostat data

All these combined trends have generated a continuous negative trade balance for total vegetables and all subgroups of vegetables, and a steady increase in import unit prices (Table 4).

Table 4

Structure of trade balances for vegetables

Item	Unit prices – imports					Trade balance				
	EUR/kg				T3/T0	EUR million				T3/T1
	T0	T1	T2	T3		T0	T1	T2	T3	
<b>Total vegetables</b>	<b>0.22</b>	<b>0.51</b>	<b>0.70</b>	<b>0.88</b>	<b>4.0</b>	<b>0.33</b>	<b>-164.98</b>	<b>-286.47</b>	<b>-682.11</b>	<b>4.1</b>
Tomatoes	0.19	0.72	0.83	1.21	6.5	-13.80	-80.95	-89.27	-200.66	2.5
Onions	0.12	0.19	0.23	0.37	3.0	-11.40	-12.75	-19.85	-52.45	4.1
Garlic	0.31	0.71	1.83	1.95	6.3	-5.12	-2.88	-12.72	-20.71	7.2
Cabbage & cauliflower	0.12	0.21	0.36	0.55	4.8	-1.85	-6.85	-17.54	-37.97	5.5
Lettuce	0.52	0.97	0.95	1.22	2.3	-0.51	-7.18	-16.46	-34.07	4.7
Edible roots	0.15	0.22	0.38	0.50	3.3	-4.98	-15.01	-26.18	-53.25	3.5
Cucumbers	0.20	0.70	0.79	1.02	5.0	5.68	-1.20	-1.10	-19.84	16.5

Table 4 (continued)

Leguminous vegetables	0.21	0.65	0.65	0.74	3.5	0.35	0.05	-1.98	-0.62	-11.3
Eggplants	0.34	0.61	0.72	0.99	2.9	-0.44	-2.22	-4.08	-9.32	4.2
Peppers	0.27	0.49	1.10	1.47	5.5	-2.31	-13.69	-43.95	-112.48	8.2
Other fresh vegetables	0.30	1.08	1.78	1.47	4.9	29.34	19.97	16.59	3.38	0.2
Frozen & dried vegetables	0.45	0.57	0.69	0.81	1.8	5.38	-42.26	-69.94	-144.11	3.4

Source: Author's calculations based on Eurostat data

In the post-accession period, import values increased at a higher pace as compared to import quantities, such differences resulting in a significant increase in import unit prices: 6.5 times for tomatoes, 6.3 times for garlic, 5.5 times for peppers, 5 times for cucumbers (latest post-accession years – 2017–2022 average versus the pre-accession period – 2000–2006 average).

## 5. CONCLUSIONS

Romania has good soil and climate conditions for producing vegetables, but in order to obtain high yields and good quality products, commercial vegetable farms need irrigation facilities, since the main restrictive factor is drought in all lowland areas.

Vegetables can make good use of small plots of land; therefore, they are currently found in most kitchen gardens, contributing significantly to family on-farm supply, mainly in rural areas.

The important changes that occurred in the transition period (1990–1999) fractured the previously existing supply chains; although progress has been made in putting them together again, they do not function as efficiently as in other EU Member States. The improper functioning of vegetables supply chains has been accentuated by the change in the land ownership regime that resulted in plot fragmentation, as well as by the privatisation at different paces or disappearance of the upstream and downstream enterprises.

The current main obstacle in the vegetables supply chains is the lack of supply concentration caused by farmers' reluctance to get associated, which would give them better opportunities and bargaining power in relation to other actors in the supply chain and mainly with the retail companies that are currently supplying urban consumers mostly with imported vegetables.

Potato and vegetable exports are very low, while imports increased significantly in the post-accession period in both value and quantity. Currently, the share of imports in the consumption availabilities of agri-food products reached

27% for potatoes and 26% for vegetables, while the self-sufficiency ratio declined over time: 56% for potatoes, 70% for vegetables and 62% for tomatoes.

For vegetables, Turkey remained the main supplier, in both pre- and post-accession periods, while France, Germany and Netherlands are the main suppliers for potatoes.

In the post-accession period, the trade balance has been continuously negative for potatoes, for total vegetables and for the main vegetable subgroups (tomatoes, onions, edible roots, peppers, cabbage & cauliflower, eggplants). The deficit in monetary terms was pushed up by the increase in unit prices as well.

Various strategies for the recovery of the potato and vegetable sectors have been designed; but the desired results can be achieved only by the implementation of long-term plans, which should necessarily include the development of commercially-oriented farms, implementation of modern and greener technologies (addressing reduction in chemical inputs and efficient use of scarce resources such as water and labour), intensification of horizontal and vertical integration, setup of more short supply chains and development of processing units.

## REFERENCES

1. Alboiu, C., 2011. Farmers' Choices in the Vegetable Supply Chain: Problems and Possibilities, *Agricultural Economics and Rural Development*, vol. 8, issue 2, pp. 221–234. Available at <<https://ideas.repec.org/a/iag/reviea/v8y2011i2p221-234.html>>. [Accessed November 2023].
2. Alboiu, C., 2016. Romanian Vegetable Volatility and Comparisons with Other EU Countries, *Lucrări Științifice Management Agricol*, Seria I, vol. XVIII, issue 2, pp. 5–10. Available at: <<https://lsma.ro/index.php/lsma/article/view/901/pdf>>. [Accessed November 2023].
3. FAO, 2022. *The state of agricultural commodity markets 2022. The geography of food and agricultural trade: Policy approaches for sustainable development*. Available at: <<https://www.fao.org/3/cc0471en/online/state-of-agricultural-commodity-markets/2022/food-agricultural-trade-globalization.html>>. [Accessed December 2023].
4. Gavrilăscu, C., 2016. European and Romanian Trade in Fruit and Vegetables. Evaluations of Effects of the Russian Embargo. *Lucrări Științifice Management Agricol*, Seria I, vol. XVIII, issue 1, pp. 95–102. Available at: <<https://lsma.ro/index.php/lsma/article/view/944/pdf>>. [Accessed November 2023].
5. Medelete, D.M., and Pânzaru, R.L., 2014. International Commercial Trade with Potatoes (2009–2011). *Scientific Papers. Series Management, Economic Engineering in Agriculture and Rural Development*, vol. 14, issue 3, pp. 175–180. Available at: <[https://managementjournal.usamv.ro/pdf/vol\\_14/art27.pdf](https://managementjournal.usamv.ro/pdf/vol_14/art27.pdf)>. [Accessed November 2023].
6. National Institute of Statistics (NIS), 2023. *Tempo on-line*. Available at: <<http://statistici.insse.ro:8077/tempo-online/#/pages/tables/insse-table>>. [Accessed November 2023].
7. National Institute of Statistics (NIS), 2024. *Consumption availabilities for the population. 2005–2023 yearly issues*. Available at: <<https://insse.ro/cms/ro/tags/disponibilitatile-de-consum-ale-populatiei>>. [Accessed January 2024].
8. Popescu, A., 2022. The Importance of Production and Import for Ensuring Food Availability in Romania, *Scientific Papers. Series Management, Economic Engineering in Agriculture and Rural Development*, vol. 22, issue 1, pp. 533–548. Available at: <[https://managementjournal.usamv.ro/pdf/vol.22\\_1/Art61.pdf](https://managementjournal.usamv.ro/pdf/vol.22_1/Art61.pdf)>. [Accessed October 2023].

9. Popescu, A.; Chiurciu, I.; Soare, E.; Stoicea, P. and Iorga, A., 2022. Trends in Average Annual Food Consumption per Inhabitant in Romania, *Scientific Papers. Series Management, Economic Engineering in Agriculture and Rural Development*, vol. 22, issue 3, pp. 561–580. Available at: <[https://managementjournal.usamv.ro/pdf/vol.22\\_3/Art60.pdf](https://managementjournal.usamv.ro/pdf/vol.22_3/Art60.pdf)>. [Accessed November 2023].
10. Soare, B.E., 2018. Romanian Trade with Potatoes in the European Union Context, *Scientific Papers. Series Management, Economic Engineering in Agriculture and Rural Development*, vol. 18, issue 1, pp. 459–464. Available at: <[https://managementjournal.usamv.ro/pdf/vol.18\\_1/Art57.pdf](https://managementjournal.usamv.ro/pdf/vol.18_1/Art57.pdf)>. [Accessed November 2023].
11. Soare, E. and Chiurciu I.A., 2021. Study on the Dynamics of Potato Production and Worldwide Trading During the Period 2012–2019, *Scientific Papers. Series Management, Economic Engineering in Agriculture and Rural Development*, vol. 21, issue 4. Available at: <[https://managementjournal.usamv.ro/pdf/vol.21\\_4/Art60.pdf](https://managementjournal.usamv.ro/pdf/vol.21_4/Art60.pdf)>. [Accessed November 2023].
12. Soare, E.; Cofas, E. and Bălan, A., 2013. Study on the Vegetables Market in the European Union, *Lucrări Științifice Management Agricol, Seria I*, vol. XV, issue 2, pp. 62–67. Available at: <<https://lsma.ro/index.php/lsma/article/view/242/28>>. [Accessed November 2023].