

STUDIES ON PRODUCTION, CONSUMPTION AND TRADE BALANCE SITUATION OF MEAT IN ROMANIA

Daniel Valeriu ULIU¹, Luxita Georgiana STAIC¹, Marius VLADU²

¹University of Agronomic Sciences and Veterinary Medicine of Bucharest, 59 Marasti Blvd, 011464, Bucharest, Romania, Phones: +40766287579, +40763542720, E-mails: daniel_uliu@icloud.com, georgistaic@gmail.com

²University of Craiova, Faculty of Agronomy, Department of Agricultural and Forestry Technology, 19 "Libertății" Street, Craiova 200583, Dolj County, Romania, Phone: +40744870085, E-mail: mariusvladu@yahoo.fr

Corresponding author: daniel_uliu@icloud.com

Abstract

Meat consumption in Romania is increasing, but domestic production is stagnant. Although animal husbandry is a basic branch of the Romanian economy, its share in agricultural production has had a downward trend in recent years. This important component of agriculture has a high potential for development, which is supported by a number of factors, including access to raw materials, the upward trend in domestic meat consumption, the record level of trade in meat, the prospect of further European economic convergence, and the consequences of the pandemic-induced shock. Domestic meat consumption has shown an upward trend in recent years, supported by an increase in household income. Meat production in Romania is below meat consumption, in the analyzed period 2015 - 2019, so it cannot ensure the necessary consumption of meat from its own production. In 2015, the production of meat per capita has a value of 54.75 kg, and the value of meat consumption per capita is 66.02 kg. In 2019, the production of meat per capita has the lowest value, of 54.72 kg, the consumption of meat per capita has the highest value of this analyzed period, of 69.85 kg. Meat consumption has been steadily rising, but Romania's GDP, urbanization and the FAO Food Price Index have had very little influence on it. In terms of meat consumption in the European Union, it is found that Belgium has the lowest value of 54.71 kg/capita (it is the fourth largest meat producer in the EU with 158.94 kg / capita), and the highest meat consumption is in Spain with 98.79 kg / capita, and Romania is ranked twenty-fourth. Meat production / capita in the European Union has the highest value in Denmark with 326.14 kg/capita and the lowest value is in Malta with 27.32 kg /capita, Romania ranks seventeenth.

Key words: food, meat, production, consumption, trade balance, FAO Meat Price Index

INTRODUCTION

In the last three decades, the perception of food by the Romanian consumer has evolved rapidly in response to socio-economic changes. As Romania is going through a transition phase, both economically and socially, the socio-economic status and the distribution of the type of population have generated specific patterns of food consumption [5]. Meat is a staple food, used to feed the population and is an important source of nutrients. Meat consumption worldwide is influenced by the traditions of each country [4]. Meat is an essential product for consumption in food, but depending on consumption it can show us the standard of living. The meat trade has resulted in a strong connection between states, which has helped

grow economies [3]. Meat production is crucial for achieving self-sufficiency targets for important agricultural products from the perspective of Romania's food security, as defined by a recent national strategy [1]. Domestic consumption of pork is not satisfied with its own production in Romania. Support is needed for pig farmers to increase production capacity in order to meet the domestic market and reduce import dependence. [7]. The number of sheep and goats is constantly growing, as is the production and export of sheep meat [9]. Income / family and piece of meat are the major factors that limit the amount of meat consumed and the frequency of purchase. The timing of availability and the origin of the meat have become increasingly important criteria on which the purchase decision is

based, in addition to the quality of the meat. All consumers prefer to eat Romanian meat that is tasty and has a pleasant aroma. In conclusion, consumers' expectations of meat producers are linked to a wide variety of high-quality meat [6]. Romania's generous natural resources and animal husbandry can provide adequate raw materials for the manufacturing industry to meet the needs of domestic consumption and to obtain substantial export earnings. At the moment. The Romanian meat market is dependent on meat imports, in the form of carcasses or processed products. It was mainly live or semi-finished animals that were exported, which led to a trade imbalance and low incomes for the domestic meat industry [10]. The agricultural and food sectors around the world are affected by globalization, changes in the rules governing international trade, and national and international agricultural and competition policies. These sectors face, on the one hand, an abundance of food markets and, on the other hand, an increase in consumer requirements for the quality of the final product [8]. Romania is dependent on imports in terms of the food market. If Romania's agriculture is properly exploited, it can ensure domestic demand, but it can also generate profit for Romanian farmers [2].

MATERIALS AND METHODS

In this paper a study was made on the production of meat from the main species of animals slaughtered in our country, also presents the balance of meat from these species of animals in Romania, in the period 2015 - 2019. Highlights the situation of meat consumption in our country. It will be examined whether meat consumption has

been influenced by GDP, the degree of urbanization and the FAO meat price index. For the correlations between (1) GDP and meat consumption, (2) the degree of urbanization and meat consumption and (3) FAO meat price index and meat consumption, the equation will be used:

$$r = \frac{\sum(x_i - \bar{X})(y_i - \bar{Y})}{\sqrt{(\sum(x_i - \bar{X})^2)(\sum(y_i - \bar{Y})^2)}}$$

where: \bar{X} and \bar{Y} - are the averages for samples, average (matrix1) and average (matrix2).

In the analysis, the values of the correlation coefficient (r) and of the coefficient of determination will be presented (R^2).

Polynomial function: the n order polynomial model:

$$y = a_0 + a_1x^1 + a_2x^2 + \dots + a_nx^n.$$

RESULTS AND DISCUSSIONS

Table 1 shows the situation of meat production from the analyzed species: beef, other meat, mutton and goat meat, pigmeat and poultry meat, in the period 2015-2019, in Romania. Total meat production increases from 1,092 thousand tons in 2015, reaches a maximum value of 1,152 thousand tons in 2018, and in 2019 reaches a minimum value of 1,063 tons of meat. Regarding the dynamics of meat production, it is observed that the highest increase, reported in 2015, was 5.49% in 2018, and in the last year of analysis the value of production decreases by 2.66% compared to 2015. Table 2 shows the balance of meat from the analyzed species from 2015 to 2019, where the total import of meat was 2,538 thousand tons of meat, and the total export of this period was 854 thousand tons of meat

Table 1. Meat production situation, in the period 2015 - 2019, in Romania

Species	Unit 1,000 Tonnes					Dynamic (%)			
	2015	2016	2017	2018	2019	2016/2015	2017/2015	2018/2015	2019/2015
Bovine Meat	119	116	111	99	102	-2.52	-6.72	-16.81	-14.29
Meat, Other	12	12	12	11	0	0.00	0.00	-8.33	-100.00
Mutton and Goat Meat	80	87	83	81	55	8.75	3.75	1.25	-31.25
Pigmeat	470	501	492	481	399	6.60	4.68	2.34	-15.11
Poultry Meat	411	419	436	480	507	1.95	6.08	16.79	23.36
Total	1,092	1,135	1,134	1,152	1,063	3.94	3.85	5.49	-2.66

Source: Own calculation according to data www.fao.org/faostat/en/#data.

Table 2. Trade balance of meat, by species in Romania, in the period 2015 - 2019

Species	Export (1,000 Tonnes)					Import (1,000 Tonnes)				
	2015	2016	2017	2018	2019	2015	2016	2017	2018	2019
Bovine Meat	12	16	20	15	11	40	39	21	23	27
Meat, Other	7	7	11	13	11	11	6	4	6	5
Mutton and Goat Meat	7	5	8	10	10	0	0	1	1	0
Pigmeat	51	68	74	58	45	264	282	333	401	397
Poultry Meat	77	79	69	77	93	123	137	146	141	130
Total	154	175	182	173	170	438	464	505	572	559
	854					2,538				

Source: Own calculation according to data www.fao.org/faostat/en/#data

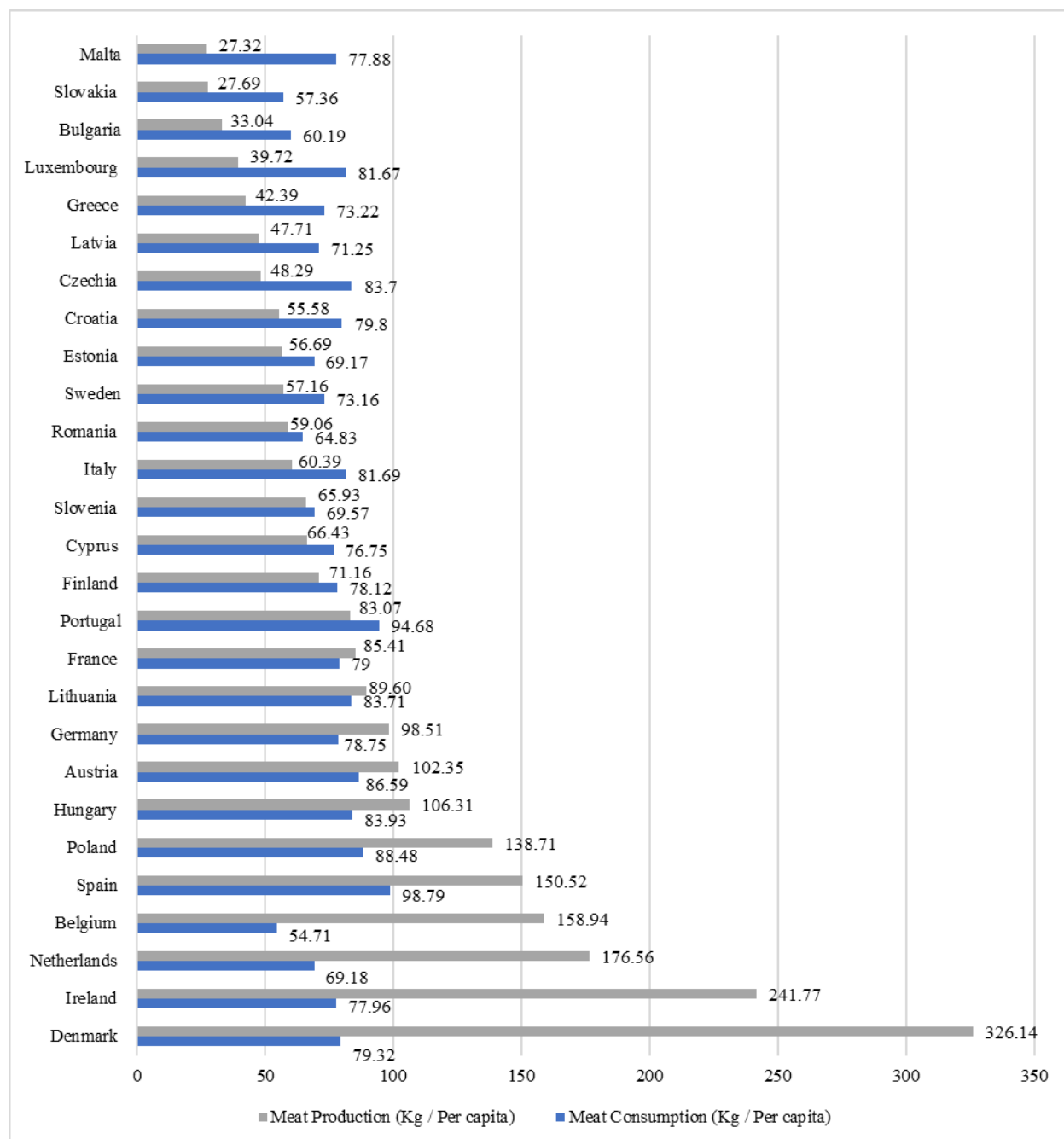


Fig. 1. Meat production and meat consumption at EU level, in 2018 (kg/capita)

Source: Own construction according to FAOSTAT data.

Figure 1 shows that the highest meat production per capita in the European Union

is in Denmark with 326.14 kg/capita, and the lowest production is Malta with 27.32 kg/capita. In this ranking, Romania is on the seventeenth place, with a production of 59.06 kg/capita.

In terms of meat consumption in the European Union, Belgium has the lowest value, at 54.71 kg/capita, although it is the fourth largest meat producer on the market in the European Union, in terms of meat production, with

158.94 kg/capita. The highest meat consumption is in Spain, with 98.79 kg/capita, this country ensures its own production, which has a value of 150.52 kg/capita. Romania ranks twenty-fourth in terms of meat consumption, with a value of 64.83 kg/capita, and has a higher value than domestic production, which shows that the need for consumption is assured from imports (Figure 1).

Table 3. Degree of urbanization, meat consumption, meat production, GDP and FAO meat price index, in Romania, in the period 2015 - 2019

	Value GDP (US\$/capita)	Meat Production (kg/capita/year)	Meat Consumption (kg/capita/year)	Degree of Urbanisation (%)	FAO Meat Price Index (2014-2016=100)
2015	8,928.14	54.75	66.02	53.84	98
2016	9,417.69	57.33	68.23	53.72	97
2017	10,160.47	57.70	67.87	53.70	100
2018	10,691.70	59.06	64.83	53.82	103
2019	11,209.22	54.72	69.85	53.97	110

Source: Own calculation according to data www.fao.org/faostat/en/#data

Figure 2 shows the dynamics of the meat balance, which shows that imports increased from 439 thousand tons of meat in 2015, to a maximum of 572 thousand tons in 2018, and in 2019 decreases to 559 thousand tons of meat. Regarding the export situation, it has the value of 154 thousand tons of meat in 2015, reaches the maximum value of 182 thousand tons of meat in 2017, and in 2019 decreases to the value of 169 thousand tons of meat. It is observed that Romania imports 3 times more meat than it exports.

Figure 3 shows that Romania has an average annual meat consumption per capita considerably lower than the European

average, for the entire analyzed period 2015 - 2019. At European level, consumption has steadily increased from 75.33 kg/capita, in 2015, at the value of 79.27 kg/capita in 2019. In Romania, the average meat consumption per capita fluctuated, from the value of 66.02 kg/capita, in 2015, to the lowest value of 64.83 kg/capita in 2018, and in 2019 it reaches the maximum value of 69.85 kg/capita. Globally, meat consumption per capita is much lower than in European meat consumption, and is approximately constant, with a value of 42.21 kg/capita in 2015, and in 2019 it increases slightly to 43.15 kg/capita.

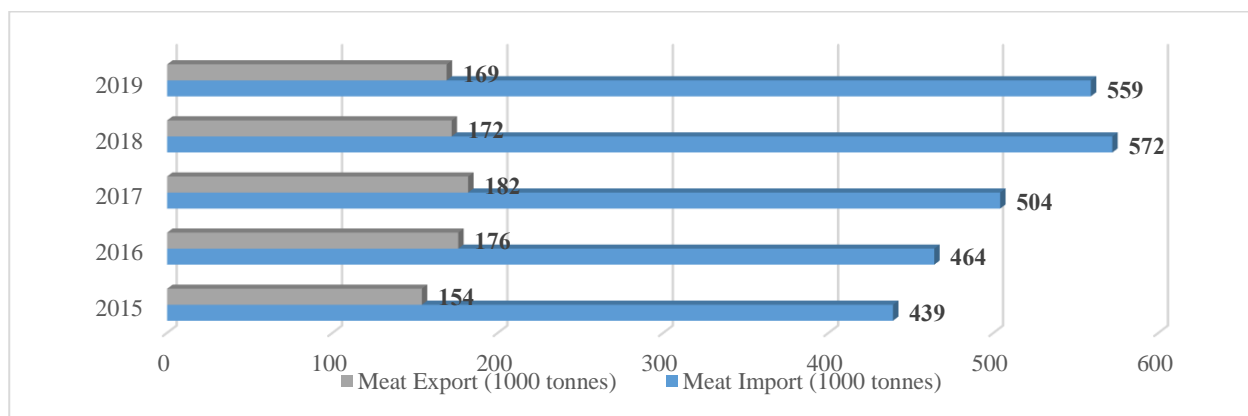


Fig. 2. Trade balance of meat in Romania, in the period 2015 - 2019

Source: Own construction according to FAOSTAT data.

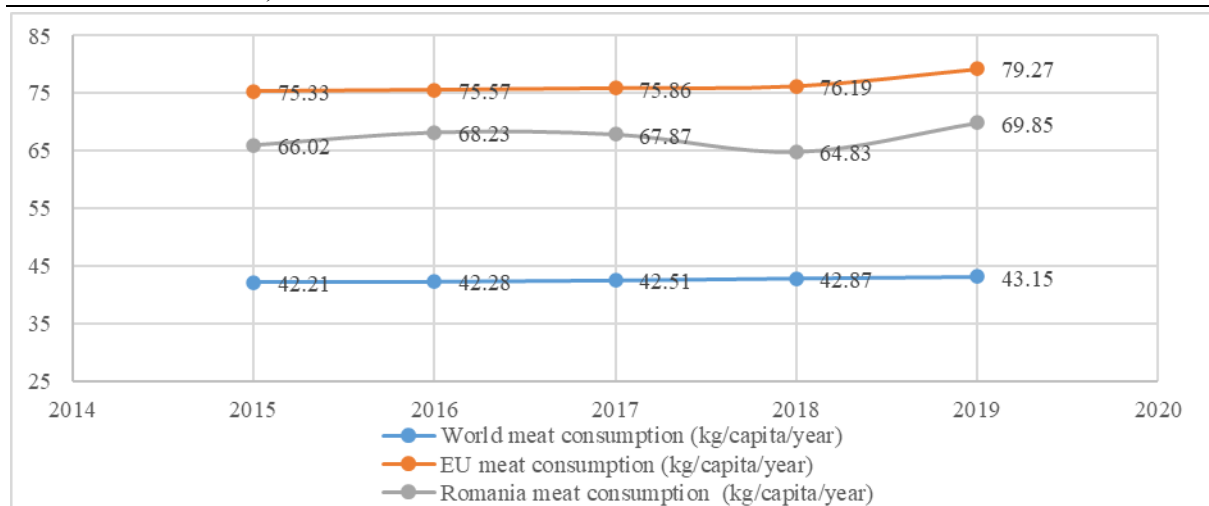


Fig. 3. Average meat consumption in the world, in the EU and in Romania
 Source: Own construction according to FAOSTAT data.

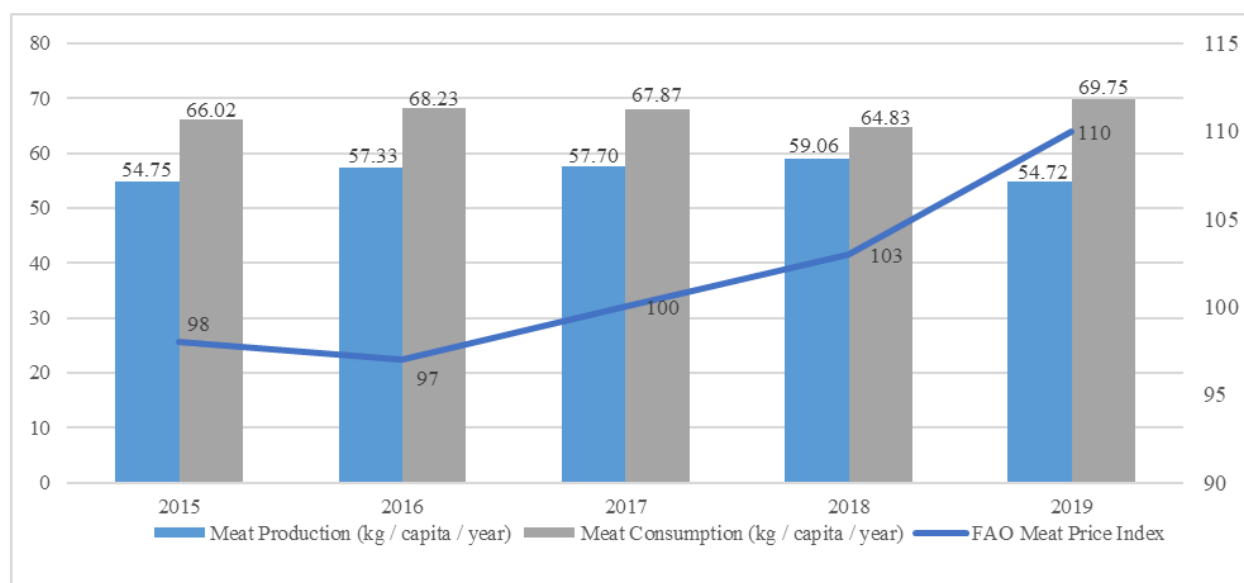


Fig. 4. Meat consumption, meat production and FAO meat price index, in Romania, in the period 2015 – 2019
 Source: Own construction according to FAOSTAT data.

Figure 4 shows that meat production in Romania is below meat consumption, throughout the analyzed period, so it cannot ensure the necessary consumption of meat from its own production.

In 2015, the production of meat per capita is 54.75 kg, and the value of meat consumption per capita is 66.02 kg, and the value of the FAO Meat Price Index is 98.

In the following year, 2016, the production of meat per capita increases to 57.33 kg, and per capita meat consumption reaches 68.23 kg and the FAO Meat Price Index has a slight decrease to 97.

At the level of 2017 and 2018, the production of meat per capita was approximately constant, with the value of 57.7 kg, respectively 59.06 kg. Meat consumption per capita in 2017 was 67.87 kg, and in 2018 its value decreased to 64.83 kg, while the FAO Meat Price Index increased from 100 in 2017 to of 103 in 2018.

In 2019, the production of meat per capita has the lowest value, of 54.72 kg, the consumption of meat per capita has the highest value of this analyzed period, of 69.75 kg, also the FAO Meat Price Index has the highest high value of 110.

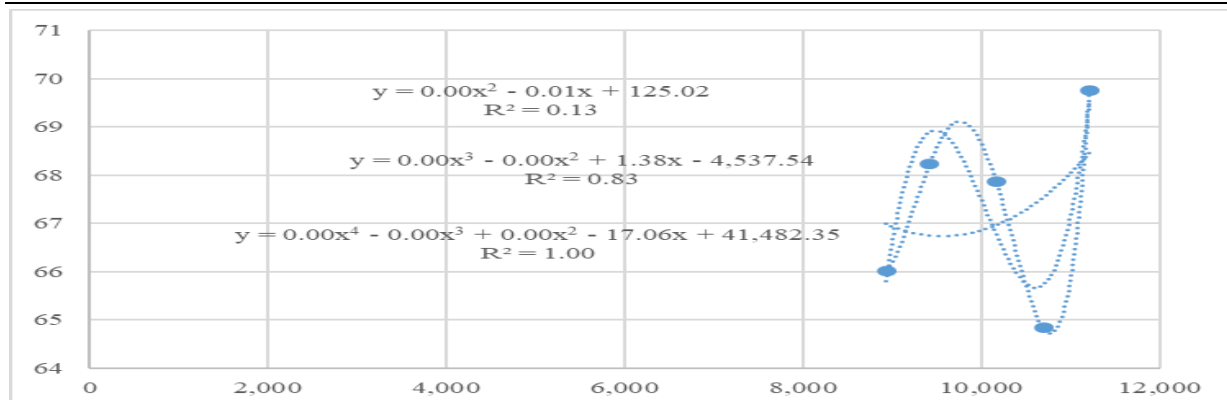


Fig. 5. Correlation between GDP and meat consumption

Source: Own construction

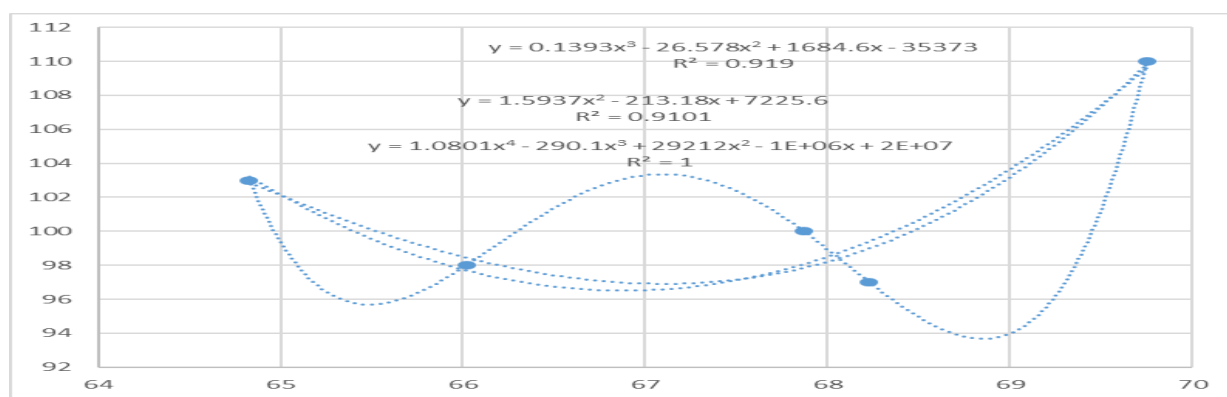


Fig. 6. Correlation between the degree of urbanization and meat consumption

Source: Own construction.

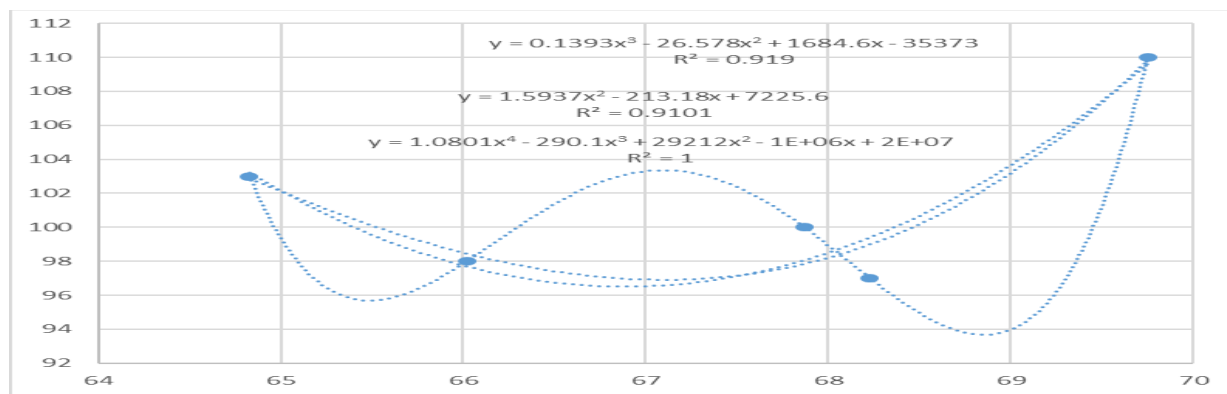


Fig. 7. Correlation between FAO Meat Price Index and meat consumption

Source: Own construction.

The result of the correlation between GDP and meat consumption is 0.3, which results in a weak dependence between the two variables, so we can say that the value of GDP had a weak influence on the evolution of meat consumption in Romania. Starting with the third degree polynomial function, an increasingly close connection is observed between the two variables (Figure 5).

Following the correlation between the degree of urbanization and meat consumption, the value was 0.21, so we can say that the degree that the evolution of meat consumption was not influenced by the degree of urbanization in Romania. Starting with the third degree polynomial function, an increasingly close connection is observed between the two variables (Figure 6).

Following the correlation between the FAO Meat Price Index and meat consumption, the value of 0.4 resulted, so a direct correlation with a weak dependence, which shows that although the price of meat has increased, so has the consumption of meat in Romania. Starting with the second degree polynomial function, a closer connection is observed between the two variables (Figure 7).

CONCLUSIONS

Total meat production increases from 1,092 thousand tons in 2015, reaches a maximum value of 1,152 thousand tons in 2018, and in 2019 reaches a minimum value of 1,063 tons of meat.

The trade balance of meat from the analyzed species from 2015-2019 shows that the total import was 2538 thousand tons of meat, and the total export was 854 thousand tons of meat.

Meat consumption in Romania is increasing, but domestic production is stagnant. Meat production in Romania is below the European meat consumption, throughout the analyzed period, so it cannot ensure the necessary consumption of meat from its own production. In 2015, the production of meat per capita has a value of 54.75 kg, and the value of meat consumption per capita is 66.02 kg. In 2019, the production of meat per capita has the lowest value, of 54.72 kg, the consumption of meat per capita has the highest value of this analyzed period, of 69.85 kg. The correlations show that meat consumption has increased steadily, but Romania's GDP, urbanization and the FAO Food Price Index have had very little influence on it.

In terms of meat consumption in the European Union, it is found that Belgium has the lowest value of 54.71 kg/capita (it is the fourth largest meat producer in the EU with 158.94 kg/capita), and the highest meat consumption is in Spain with 98.79 kg/capita, and Romania is ranked twenty-fourth with 64.83 kg/capita.

Meat production/capita in the European Union has the highest value in Denmark with 326.14 kg/capita and the lowest value in Malta is 27.32 kg/capita, Romania ranks seventeenth with 59.06 kg/capita.

REFERENCES

- [1]Alexandri, C., Lucian, L., Ionel, I., Grodea, M., 2017, The Possibility to Reach Meat Self-Sufficiency in Romania in the Long Term, Strategies for the Agri-Food Sector and Rural Areas - Dilemmas of Development, 169–81.
- [2]Bichescu, C., Stanciu, S., 2018, Considerations on the Romanian International Trade with Agri - Food Products, Annals of Dunarea de Jos University of Galati 13 (August): 29–36.
- [3]Niculae, I., Costaiache, G.M., 2015, Study Regarding Romanian Meat Production and Trade, Agriculture and Agricultural Science Procedia, Conference Agriculture for Life, Life for Agriculture, 6 (1): 682–689.
- [4]Pânzaru, R.L., Medelete, D.M., 2021, Some Considerations Regarding Meat Consumption in Romania (2014-2018), Scientific Papers Series Management, Economic Engineering in Agriculture and Rural Development, 21 (4): 403-408.
- [5]Pogurschi, E. N., Munteanu, M., Nicolae, C.G., Marin, M.P., Zugravu, C.A., 2018, Rural-Urban Differences in Meat Consumption in Romania. Scientific Papers-Series D-Animal Science, 61 (2): 111–115.
- [6]Popescu, A., 2013, Research on Consumer Behaviour on Bucharest Meat Market, Scientific Papers Series Management, Economic Engineering in Agriculture and Rural Development, 13 (1): 301-307.
- [7]Popescu, A., 2016, Research on Concentration of Pork Production in Romania, Scientific Papers Series Management, Economic Engineering in Agriculture and Rural Development, 16 (1): 405-10.
- [8]Sandu, M., Mantea, S., 2017, Study on the Meat Sector in the European Union. Scientific Papers-Series Management Economic Engineering in Agriculture and Rural Development 17 (1): 375–380.
- [9]Soare, E., 2016, Study on Sheep and Goat Meat Market in Romania, Scientific Papers-Series Management Economic Engineering in Agriculture and Rural Developmen, 16 (1): 505-510.
- [10]Stanciu, S, Rizea, R.D., Ilie, A.G., 2015, Study on the Competitiveness of the Romanian Meat Processing Industry. Amfiteatru Economic, 17: 1331–1345.

