Scientific Papers Series Management, Economic Engineering in Agriculture and Rural Development
Vol. 16, Issue 4, 2016
PRINT ISSN 2284-7995, E-ISSN 2285-3952

CONSIDERATIONS ON BEEF PRODUCTION, CONSUMPTION AND TRADE BALANCE IN ROMANIA (2007-2015)

Agatha POPESCU

University of Agricultural sciences and Veterinary Medicine of Bucharest, 59 Marasti Boulevard, District 1, Bucharest, Romania, Phone: +40213122564, Fax: +40213182888, Email: agatha_popescu@yahoo.com

Corresponding author: agatha_popescu@yahoo.com

Abstract

The paper analyzed the dynamics of bovine meat live stock, production, live weight at slaughter, carcass weight, beef and veal consumption, beef supply, export and import and trade balance of Romania in the period 2007-2015 using the empirical data provided by the National Institute of Statistics. The analysis led to important conclusions. Beef comes on the 3rd position after poultry meat an pork in Romania. Beef production declined and so that imports were needed to cover the gap between production and consumption. The decline of the bovine live stock is the main cause as farmers are facing with high farm inputs prices and receive a low farm gate price per kg live weight. In the structure of the slaughtered bovines cows represent over 50 %, fattened steers 25 % and other categories (bulls, heifers, calves etc). The average live weight and quality at slaughter is lower compared to other EU countries. The slaughter rate is less than 50 %. Only 26 % of bovines are slaughtered in industrial specialized units, where the fattened steers of high quality and over 400-430 kg live weight per head are usually slaughtered. Beef consumption is low as pork and poultry meat are preferred by consumers and beef price is too high. Romania is a net exporter of bovine meat, but the highest share in the export structure belongs to bovine live weight (84.4%). In 2020, it is expected as bovine live weight at slaughter to reach 235 thousand tons for an annual growth of 7 thousand tons. To develop meat production it is needed to create farmers associations, to raise meat breeds and apply modern fattening technologies.

Key words: *consumption, forecast, meat, production, foreign trade, Romania*

INTRODUCTION

Human health can be assured by a balanced diet in which meat plays an important role. At world level there are discrepancies regarding meat consumption from 72.2 kg/inhabitant in the developed countries to 33.5 kg/inhabitant in the developing ones, and the world average is only 42.9 kg meat/capita. According to FAO, to eliminate malnutrition and under-nourishment, a person must consume 33 kg lean meat or 45 kg fish or 60 kg eggs or 230 kg milk per year. The continuous growth of world population leads to a higher meat demand [5].

In human diet, beef plays an important role grace to the nutritional value determined by its chemical composition: water 66 %, proteins 18.6 %, fats 2.5 %, 7,137 mg essential amino-acids for 100 g, non-essential amino-acids 11,292 mg per 100 g, vitamins per 100 g (niacin 4.7 mg, biotin 3.04 mg, B12 2.6 mg, B6 0.37 mg, E vitamin 0.57 mg/100g, traces of A and C vitamins, pantothenic acid 0.5 mg, riboflavin 0.5 mg, thiamine 0.06 mg), minerals 1 %[2].

Bovine meat production accounted for 67 million tons in 2012 at world level, representing 22.02 % of the world meat output, 304.2 million tones, of which 112.4 pork (36.9%) and 105.4 million tones poultry meat (34.6%). The world trade with bovine meat accounted for 8 million tons, representing 26.93 % of the total meat trade, 29.7 million tons[17].

In 2015, the main beef and beef products exporters were USA, Australia, Brazil, India and New Zealand, Canada and EU. In the same year, the main beef and beef products importers were USA, China, Russia, Japan, Mexico, South Korea and EU [7].

According to USDA, in 2015, the world beef and veal (carcass live weight equivalent) accounted in for 60,022 metric tons and beef and veal consumption was 58,164 metric tons.

The main exporters were represented by Brazil, India, Australia, New Zealand, Canada, Paraguay, Uruguay and EU, while the main importers of beef/veal were China, Japan, Russia, South Korea and EU [16].

Beef production will continue to develop in the next decades by an annual growth rate of 1.7 %, the main exporting countries being Brazil, China and the USA [14].

In 2015, the EU-28 beef production accounted for 7,591 thousand tons (carcass weight), of which 32.4 % from bulls, 30.2 % from cows, 14.9 % from young cattle, 14.8 % from heifers, 9.4 % from bullocks, and 8.1 % from calves [9].

For this reason, it comes on the 3rd position in the world for beef/veal production with a market share of 12 %, after the USA (17%) and Brazil (13%). Also, its market share in the world beef/veal trade accounts for 2 % for export and 9 % for import value. About 72 % of beef/veal production is carried out by France, Germany, Italy, the United Kingdom, Spain and Ireland, which are the main producers in the EU [1].

The EU-28 beef trade has been continuously developing. In 2015, the EU-28 exported 448,223 tons beef products (bovine carcass weight) accounting for Euro thousand 1,399,899. The exported products were live animals, fresh, frozen, prepared meat and other products. The EU-28 imports accounted for 322,753 tons bovine carcass weight whose value was Euro thousand 2,060,481. The main beef products suppliers for the EU are Brazil, Uruguay, Argentina, Australia, USA and other countries.

In 2015, the EU-28 beef trade balance is a positive one, with +811 million Euro, because the export value accounted for 1,898 Million Euro (+12.17% compared to 2012) and the import value was 1,087 Million Euro (+26.24 % compared to 2012) [10].

The rigorous strategy for meat production development according to the CAP policy assures a constant production, consumption and trade. In 2023, it is expected as the EU beef production to reach 7.6 million tons and beef consumption to account for 10 kg/capita [4].

In 2014, Romania came on the 19th position in the EU-28 with 29 thousand tons slaughtered bovine live weight and 136 thousand heads, representing 0.39 % and respectively 0.53 % of the total slaughtering at the EU level. The main positions regarding bovine slaughtering live weight are occupied by France (19.3 %), Germany (15.4%), United Kingdom (11.9%) , Italy (9.6%) and Ireland (7.9%) [7].

In this context, the paper aimed to analyze the evolution of beef production, consumption and trade in Romania in the period 2007-2015 based on the data provided by the National Institute of Statistics.

MATERIALS AND METHODS

The paper imposed the collection of empirical data from the National Institute Data base for the period 2007-2015 [11]. The main indicators taken into consideration to set up this analysis have been the following ones: cattle live stock, live weight of slaughtered bovines at national level and in the industrial specialized units, average live weight at slaughter, carcass weight, slaughter rate, the position of beef among other meat sorts, the degree of consumption covering by bovine meat production, bovine meat supply, export/import ratio, export/production ratio, foreign trade with bovine meat, farm gate price per kilogram of bovine live weight.

The data were processed using the analysis in dynamics based on the fixed basis indices, the comparison method and the forecast for the period 2016-2020 in three scenarios based on the results in the analyzed period. The V1 scenario was based on the average gain in live weight of slaughtered animals in the whole period 2007-2015, the V2 scenario is based on the average gain in live weight of slaughtered animals in the period 2013-2015, and the V3 scenario was based on the gain recorded in 2015 compared to 2014.

The result were presented in tables and graphics and were interpreted.

RESULTS AND DISCUSSIONS

Cattle stock. In Romania, cattle farming is a traditional activity of the population in the rural space especially in the hilly and mountain areas. In this way, it contributes to the stability of labor force in the rural areas, assuring an important income to rural households. Among other advantages, cattle growing is a sustainable activity based on the use of: (i)the local dual purpose breeds supplying a large variety of products but mainly milk and meat; (ii) cheap forage resources like pastures and meadows and cereals and secondary products resulted from cereals and technical plants cropping; (iii) low energy consumption [6].

Romania has a good potential for producing beef and veal due to its cattle livestock accounting for 2,092 thousand heads in 2015. From this point of view, in the EU-28, Romania comes on the 10th position regarding cattle livestock after France, Germany, United Kingdom, Ireland, Spain, Poland, the Netherlands and Belgium [7].

However, the cattle livestock recorded a continuous decline in the analyzed period so that in 2015, it was by 25 % less numerous than in 2007 when it accounted for 2,818 thousand heads. The minimum cattle livestock was recorded in 2011, 1,988 thousand heads, but since the year 2012. it started a slight recover, as confirmed by the annual growth rates (Table 1).

Table 1. The dynamics of cattle livestock and the annual growth rate in Romania in the period 2007-2015 (Thousand heads)

	2007	2008	2009	2010	2011	2012	2013	2014	2015
Cattle live stock	2,818	2,683	2,512	2,001	1,988	2,009	2,022	2,069	2,092
Growth rate (%)	-	-4.8	-6.4	-20.4	-0.7	+1.0	+0.5	+2.3	+1.1

Source: Own calculation based on NIS Database, 2016

The main causes determining the decline in cattle livestock are the low consumption of beef and veal, as pork is traditional in Romania and poultry meat is a lean, tasty, and cheaper meat, the low milk price at farm gate which does not stimulate farmers to increase the number of dairy cows, the invasion of imported milk and dairy products and also of meat products at lower prices in the market which compete with the more expensive local products and affect Romanian producers, the nonsufficient support offered by Government to farmers and the high price for farm inputs.

There are important differences regarding the distribution of cattle livestock among the development regions in Romania. The highest number of cattle is grown in NE, NW and Central area of Romania, accounting for more than 59 % of the total cattle stock.

Cattle are grown in about 700 thousand farms of small size, over 24 % having less than 1 ha, 59 % having between 1-5 ha, and just 0.6 % have more than 50 ha. The average number of cattle per farm was 2.75 heads in the year 2015.

The weight of slaughtered bovines. The decline of the cattle stock had a deep impact on the weight of slaughtered animals. At national level, the weight of slaughtered animals (all species included) accounted for 1,431 thousand tons, being by 4.8 5 less than in 2007 (1,503 thousand tons).

The weight of slaughtered bovines declined by 40 % from 333 thousand tons in 2007 to 200 thousand tons in 2015 (Fig.1.)

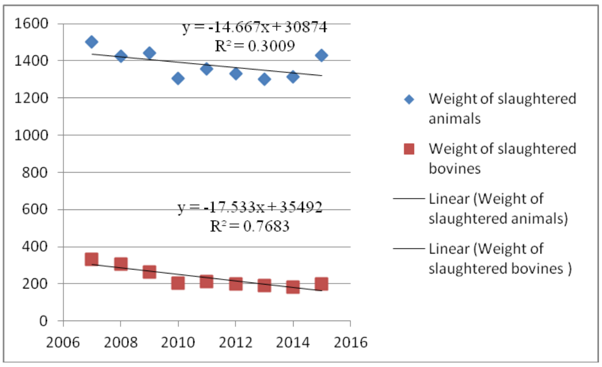

Fig.1. The dynamics of the live weight of slaughtered animals and of slaughtered bovines in Romania in the period 2007-2015 (Thousand tons)

Source: Own design and calculation based on NIS Database, 2016

Therefore, the contribution of bovines to the weight of slaughtered animals registered a continuous decreasing trend from 22.15 % in 2007 to 13.97 % in 2015 (Table 2).

Table 2.The dynamics of the live weight of slaughtered bovines and its contribution to the weight of slaughtered animals in Romania in the period 2007-2015

	MU	2007	2008	2009	2010	2011	2012	2013	2014	2015	2015/2007 %
Weight of slaughtered bovines	Thou. tons	333	306	264	205	212	198	192	183	200	60
Share in the weight of slaughtered animals	%	22.1	21.4	18.2	15.7	15.6	14.8	14.7	13.9	13.9	-

Source: Own calculation based on NIS Database, 2016

The contribution of various development regions to the weight of slaughtered bovines depends on the local growing conditions and the number of bovines. In 2007, the 333 thousand tons bovine live weight at slaughter was achieved by the following contribution of the micro development regions: NE 20.4 %, NW 18.3 %, South Muntenia 19.1 %, Center 14 %, SE 10.5 %, SW Oltenia 10.3 %, W 6.6. % and Bucharest Ilfov 0.80 %. In 2015, the contribution of the micro development regions was the following one: NW 13.1 %, Center 18.3 %, NE 26.3 %, SE 10.7 %, S Muntenia 15.3 %, Bucharest Ilfov 0.4 %, SW Oltenia 8.6 % and WW 7.3 % [13].

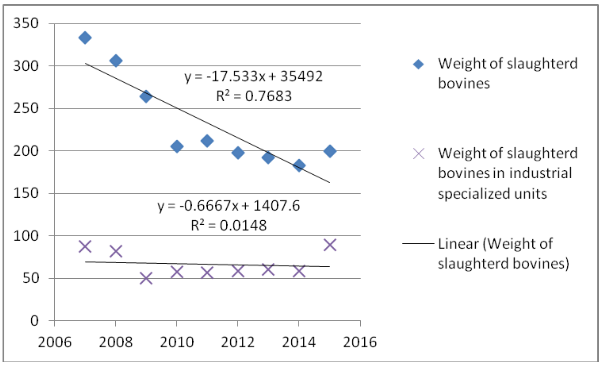

Fig.2.The dynamics of the weight of the slaughtered bovines at the national level and in the industrial specialized units in Romania in the period 2007-2015 (Thousand tons)

Source: Own design and calculation based on NIS Database, 2016.

More than this, in the industrial specialized units, the live weight of slaughtered bovines is 2.2 times smaller compared to the total live weight of the slaughtered bovines in the country. However, in 2007, the live weight of slaughtered bovines in the industrial specialized units accounted for 87.9 thousand tons, representing 26.4 % of the total weight of bovines slaughtered at national level, while in 2015, the weight of the bovines slaughtered in the industrial specialized units recorded a slight increase (+1.7%), accounting for 89.5 thousand tons, representing 44.7 % of the weight of slaughtered animals at the national level (Fig.2).

Regarding the distribution of slaughtered bovine live weight across the year, it was noticed that more cattle are slaughtered in the second half of the year, the most numerous are slaughtered In December and the fewest number in January [12].

The average live weight of bovines at slaughter. Besides the lower number of slaughtered cattle, a second cause of the decline in the live weight of slaughtered bovines is the low average weight at slaughter. However, in the analyzed period, the average bovine live weight at slaughter recorded an increase of 17 %, from 280 kg/head in 2007 to 328 kg/head in 2015.

In the industrial specialized units, the average weight at slaughter is much higher ranging between 415.9 kg/head in 2007 to 430.3 kg/head in 2015 with a peak of 442 kg/head in the year 2010 (Fig.3).

These discrepancies are determined by the structure of the slaughtered bovines: over 50 % cows, 25 % fattened steers, and the remaining being represented by bulls, heifers and young bovines [3].

In the EU, the cattle slaughtering includes 46 % males, 44 % females and 10 % young cattle

[15].

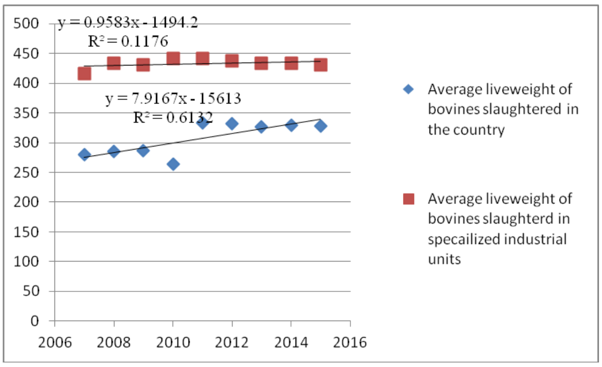

Fig.3.The dynamics of the average live weight of bovines at slaughter at the national level and in the industrial specialized units in Romania in the period 2007-2015 (kg/head)
Source: Own design and calculation based on NIS Database, 2016.

The average weight of bovine carcass is small ranging between 205.5 kg/carcass in 2007 and 213.6 kg/carcass in 2015 in the industrial specialized units.
Therefore, just 3.9 % increase was recorded in the analyzed period.
This small carcass is determined by the small live weight of bovines at slaughter, the structure of the slaughtered bovines, where fattened steers have a low percentage, and the low quality of bovines at slaughter (Table 3).

Table 3.The dynamics of average carcass weight of slaughtered bovines in the industrial specialized units in Romania in the period 2007-2015 (kg/carcass)

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2015/2007 %
Average carcass weight	205.5	211.3	212.2	218.2	217.4	213.0	210.0	214.1	213.6	103.9

Source: Own calculation based on NIS Database, 2016

The average slaughter rate (%) reflects the share of the carcass weight in the bovine live weight at slaughter. Its level is less than 50 %, varying between 49.4 % in 2007 to 49.6% in 2015 (Table 4).

Table 4.The dynamics of slaughter rate for bovines slaughtered in the industrial specialized units in Romania in the period 2007-2015 (%)

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2015/2007 %
Slaughter rate (%)	49.4	48.7	49.3	49.3	49.3	48.7	48.3	49.3	49.6	100.4

Source: Own calculation based on NIS Database, 2016

The slaughter rate reflects the small average live weight at slaughter, the low animal quality and the high share of culled cows.
The dynamics of the bovine carcass weight achieved in the industrial specialized units ranged between 43,477 tons in 2007 and 44,71 tons in 2015, reflecting an increase of 2.2 % (Fig.4).
The position of beef and veal among other sorts of meat. The results in meat sector reflect that bovine meat, of which beef and veal has the highest share (over 95%), as in the country there are grown some buffaloes, is situated on the 3rd position among the meat sorts after poultry and pork.

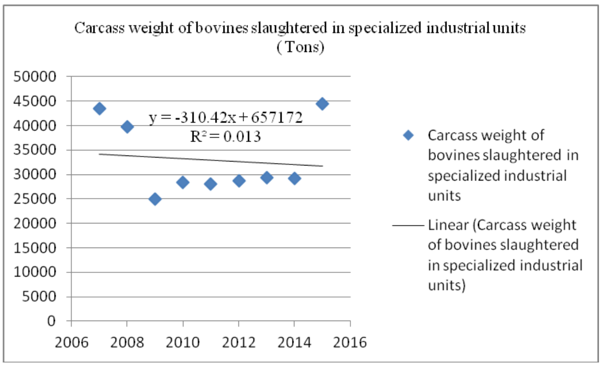

Fig.4.The dynamics of carcass weight of the bovines slaughtered in industrial specialized units in Romania in the period 2007-2015 (Tons)
Source: Own design and calculation based on NIS Database, 2016.

This situation is justified by the industrial poultry farming well developed in Romania as poultry is able to assure a high fattening gain in a very short period of time (33-42 days) and more and many consumers are oriented to poultry meat considered a healthier compared to pork and its price is more convenient in comparison with pork price and mainly with beef and veal price. However, pork remain the traditional meat in the country with an important share among the meat sorts.

If in 2007, the bovine meat contributed by 10.38 % to meat production in Romania, in 2015, its contribution declined to 5.86%. The statistics shows a slight decline in the share of poultry meat from 50.49 % to 49.38 % in favour of pork whose share increased from 38.7% in 2007 to 43.57% in 2015 (Table 5).

Table 5.The structure of meat production by meat sort in industrial specialized units in Romania in the years 2007 and 2015 (%)

Meat sort	2007	2015	2015-2007
Poultry meat	50.49	49.38	-1.11
Pork	38.70	43.54	+4.84
Bovine meat	10.38	5.86	-4.52
Sheep and goat meat	0.44	1.22	+0.78

Source: Own calculation based on NIS Database, 2016

The average beef and veal consumption per inhabitant has recorded a decline of 32.6 % from 8.3 kg/capita in 2007 to 5.6 kg/capita in 2015. The decreasing trend for bovine meat consumption is similar to the general decreasing trend in meat consumption in Romania (Table 6).

Table 6.The average consumption of meat and meat products in fresh meat equivalent in Romania in the Period 2007-2014 (kg/inhabitant)

	2007	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2014/2007 %**
Meat consumption	64.7	66	67.3	59.9	56	55.3	54.4	57.8	89.3
Bovine meat consumption	8.3	8	7.3	5.7	5.5	5	5.1	5.6	67.4
Share of bovine in meat consumption (%)	12.8	12.1	10.8	9.5	0.8	9	9.3	9.6	-

Source: Own calculation based on NIS Database, 2016

The average meat consumption declined from 64.7 kg/capita in 2007 to 57.8 kg/capita in 2014, therefore by 10.7 %. The main cause is represented by the high market price of meat, mainly for beef and veal. The share of bovine meat in the general meat consumption decreased from 12.8 % in 2007 to 9.6 % in 2014 (Table 6).

The degree of consumption covering by bovine meat production is below 100%.

Table 7. The degree of coverage of consumption by bovine meat production in Romania in the period 2010-2015

	MU	2010	2011	2012	2013	2014	2015	2015/2010 %
Bovine meat production	Tons	102,674	105,986	99,255	96,103	91,781	99,856	97.2
Bovine meat consumption	Tons	115,679	144,094	100,479	102,102	111,678	111,666	96.5
Coverage degree	%	88.7	73.5	98.7	94.1	82.2	89.4	-

Source: Own calculation based on NIS Database, 2016

This means that domestic production is not able to meet consumption and imports of beef and veal are required to cover market requirements in Romania. Looking at beef/veal production in comparison with consumption, one may easily notice the general decreasing trend of the both indicators in the analyzed period (Table 7).

The bovine meat supply. The offer of beef and veal results from production plus import minus export.

The bovine meat supply increased by 6.34 % from 88.2 thousand tons in 2010 to 93.8 thousand tons in 2015 (Table 8).

Table 8.The dynamics of bovine meat supply in Romania in the period 2010-2015 (Thousand tons)

	2010	2011	2012	2013	2014	2015	2015/2010 %
Production (tons)	102.6	105.9	99.2	96.1	91.7	99.8	97.2
Import (tons)	13.2	11.9	12.0	13.2	20.5	26.8	203.0
Export (tons)	27.6	28.7	37.6	29.8	25.5	32.8	118.84
Bovine meat supply (tons)	88.2	89.1	73.6	79.3	86.7	93.8	106.3

Source: Own calculation based on NIS Database, 2016

This was a consequence of the increased beef and veal import required to cover the difference between production and consumption, and also of the increased export of beef and veal. In the analyzed period, beef and veal production declined by 2.8 % from 102.6 thousand tons in 2010 to 99.8 thousand tons in 2015, beef and veal import increased by 103 % from 13,.2 thousand tons in 2007 to 26.8 thousand tons in 2015 and, beef and veal export increased by 18.8 % from 27.6 thousand tons in 2007 to 32.8 thousand tons in 2015.

Farm gate bovine price per kg live weight is more than double in 2015 (Lei 6.05/kg live weight) compared to 2007 (Lei 2.98/kg live weight) (Fig. 5).

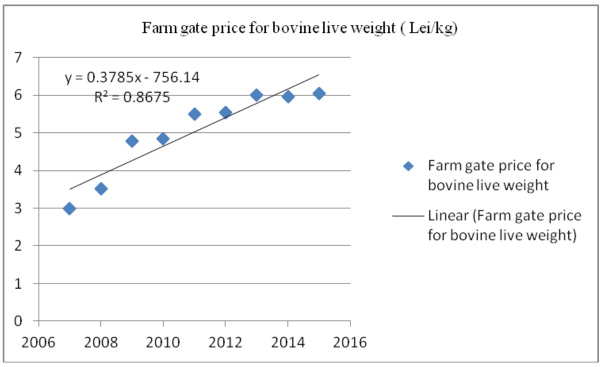

Fig.5.The dynamics of farm gate price for bovine live weight in Romania in the period 2007-2015 (Lei/kg)
Source: Own design and calculation based on NIS Database, 2016.

Despite that the acquisition price increased in the analyzed period, farmers are not satisfied because the price for farm inputs increased more and this affects production cost.

However, according to FAOStat, the price per kg live weight in Romania is among the lowest price in the EU [5]. In 2014, a Romanian farmer received USD 1.76/kg compared to USD 1.8/kg in Hungary, USD 1.89/kg in Poland, USD 1.98/kg in Russian Federation, USD 2.42/kg in Denmark, and USD 2.73/KG in Austria.

Also, the price per kg bovine live weight varies depending on the categories of slaughtered bovines: fattened steers (Lei 5.59/kg, bulls (Lei 5.57), young bovines (Lei 5.40), calves (Lei 5.16), heifers (Lei 4.98), castrated bulls (Lei 4.96) and cows (4.14). Therefore, the lowest price is offered for cows whose share in total bovine live weight is over 50 %. Even for fattened steers, the farm gate price is not enough to cover production cost in some cases,

The export/import ration for bovine meat amount recorded an increasing trend from 2.09 in the year 2010 to 3.13 in the year 2012, and then it registered a deep declining trend from 2.26 in the year 2013 to 1.22 in 2015. This was determined by the high rate of import growth compared to export growth rate.

However, the fact that the exported quantity of bovine meat exceeds the imported amounts reflects that Romania's trade with bovine meat is efficient and the country is a net exporter of bovine meat (Table 9).

The export/production ratio for bovine meat is another indicator reflecting a higher efficiency in Romania's foreign trade with bovine meat.

This ratio recorded an increasing trend from 26.9 % in 2010 to 32.8 % in 2015, showing that more bovine meat produced in the country was exported (Table 10).

Table 9.The dynamics of export/import ratio for bovine meat in Romania in the period 2010-2015

	2010	2011	2012	2013	2014	2015	2015/2010 %
Export/Import ratio	2.09	2.43	2.13	2.26	1.25	1.22	58.37

Source: Own calculation based on NIS Database, 2016

Table 10. The share of bovine exported meat in bovine meat production in Romania in the period 2010-2015 (%)

	2010	2011	2012	2013	2014	2015
Export/Production ratio	26.9	27.1	37.9	31.0	27.8	32.8

Source: Own calculation based on NIS Database, 2016

The export and import value of bovine meat. As a consequence of the exported and imported quantity and of export and import price for various sorts of bovine meat (cattle live weight, fresh and refrigerated beef, frozen beef), both the export and import value recorded an increase by about 50 %. In 2013, Romania's export value of bovine meat was Euro thousand 154,861 compared to Euro thousand 103,026 in 2007. In 2015, the import value of bovine meat accounted for Euro thousand 45,267 compared to Euro thousand 30,304 in 2007 (Fig.6).

As a result the ratio export/import in terms of thousand Euro also reflects that Romania has an efficient foreign trade with bovine meat (Table 11).

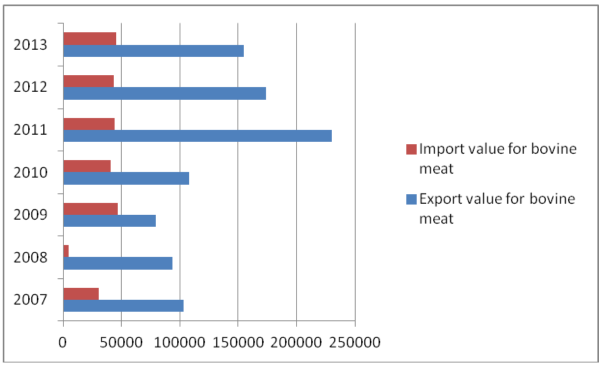

Fig.6.The dynamics of export and import value for bovine meat, Romania, 2007-2013 (Thousand Euro)
Source: Own design and calculation based on NIS Database, 2016.

The structure of export value and import value reflects that Romania exports more live weight and less fresh and refrigerated and frozen beef, and imports more frozen beef than bovine live weight and fresh and refrigerated beef (Table 12).

Table 11. The dynamics of export/import value ratio for bovine meat, Romania, 2007-2013

	2007	2008	2009	2010	2011	2012	2013	2013/2007 %
Export/Import value ratio	3.39	2.15	1.70	2.65	5.19	3.98	3.42	100.88

Source: Own calculation based on NIS Database, 2016

Table 12.The structure of Romania's export and import of bovine meat by sort, 2007 and 2013

	2007		2013		Difference 2013-2007	
	Export	Import	Export	Import	Export	Import
Cattle live weight	90.25	33.24	84.40	26.18	-5.85	7.04
Fresh and refrigerated beef	8.42	17.02	7.78	18.76	-0.64	+1.76
Frozen beef	1.33	49.74	3.82	55.06	+2.49	+5.32

Source: Own calculation based on NIS Database, 2016

A positive aspect of bovine export is that the share of cattle live weight declined from 90.25 5 in 2007 to 84.40 % in 2013, and frozen beef increased from 1.33 % in 2007 to 3.82 % in 2013.

A negative aspect of Romania's trade with bovine meat is that the share of the imported frozen beef increased from 49.74 % in 2007 to 55.6 % in 2013 and the imported fresh and refrigerated beef increased from 17.02 % in

Scientific Papers Series Management, Economic Engineering in Agriculture and Rural Development
Vol. 16, Issue 4, 2016
PRINT ISSN 2284-7995, E-ISSN 2285-3952

2007 to 18.76 % in 2013.

This means that Romania pays more for processed bovines and receives less money for cattle live weight which does not involve any processing and value added.

The bovine meat trade balance. Taking into account the dynamics of export and import value for bovine meat, the trade balance was positive in every year in the analyzed period, and in 2013 it was recorded a surplus of 50.62 % compared to the 2007 level. Thus, in 2013, the trade balance accounted for Euro thousand 109,534 compared to Euro thousand 72,722 in 2007 (Table 13).

Table 13. The bovine meat trade balance of Romania in the period 2007-2013 (Thousand Euro) Trade balance

	2007	2008	2009	2010	2011	2012	2013	2013/2007 %
Trade balance	72,722	50,236	32,843	67,277	185,984	130,158	109,534	150.62

Source: Own calculation based on NIS Database, 2016

The forecast of live weight of slaughtered bovines for the period 2016-2020.

Based on the evolution of the weight of the slaughtered bovines, and the its growth rate from a year to another, it was established the forecast for the period 2016-2020 in three variants, as follows:

V1-Pessimistic scenario, based on the average gain for the whole period 2007-2015 accounting for -18 thousand tons live weight;

V2-Pessimistic scenario based on the average gain recorded in the last three years of the analysis, 2013-2015, accounting for - 8 thousand tons;

V3-Optimistic scenario, based on the gain recorded in 2015 compared to 2014, that is + 7 thousand tons. The calculations started from the performance registered in 2015 (Table 14).

Table 14. The forecast for live weight of slaughtered bovines for the period 2016-2020 (Thousand tons) Optimistic Scenario

	2016	2017	2018	2019	2020
V1-Pessimistic Scenario	182	164	146	128	110
V2-Pessimistic Scenario	192	184	176	168	160
V3-Optimistic Scenario	207	214	221	228	235

Source: Own calculation.

CONCLUSIONS

Beef and veal production in Romania declined in the analyzed period, affecting the internal market whose requirements had to be covered by imports.

This was due to the decrease of the bovine live stock as farmers are facing with high prices for farm inputs and a low acquisition price offered by intermediaries and meat processors.

The structure of the slaughtered bovines is not a corresponding one because it includes over 50 % cows, 25 % fattened steers and other categories (bulls, heifers, calves etc).

The local breeds are not able to assure a higher performance for bovine live weight at slaughter.

The average bovine live weight and quality at slaughter is lower compared to other EU countries.

The slaughter rate is less than 50 % reflecting the non corresponding structure of the slaughtered bovines.

Only 26 % of bovines are slaughtered in industrial specialized units where the average carcass weight is higher than the average carcass weight at national level.

This is due to the fact that in the industrial specialized units are slaughtered mainly fattened steers of high quality and over 400-430 kg live weight per head.

Beef and veal consumption is low as pork and poultry meat are preferred due to the existing tradition, taste, flavor and a more convenient purchase price per kilogram.

Romania is a net exporter of bovine meat with a positive trade balance.

However, in the structure of its export, bovine live weight has the highest share (84.4%), while fresh and refrigerated beef and frozen beef have only 7.78 % and, respectively, 3.81 %, involving a low value added and export price.

The forecast for bovine live weight at slaughter showed that in 2020, in the optimistic scenario, this indicator will reach 235 thousand tons for an annual growth of 7 thousand tons.

A few recommendations are imposed in order to improve beef production, consumption and export as follows:

(i)It is needed an increased number of farmers to deal with steer fattening based on the measures and regulations established by the Romanian Government, Ministry of Agriculture and Rural Development and the EU regarding the payment per surface, and for agricultural producers with a minimum number of 3 bovines of at least 16 months age old and for male and female bovines and for stimulating young farmers to raise animals.

(ii)Farmers must join their capital and create associations in order to raise more animals and carry out a higher performance by applying for EU funds.

(iii)A change of the breed structure in meat production requires a cross-breeding between the local breeds and meat breeds like Angus, Charolaise and Limousine.

(iv)The use of pastures and meadows is needed for the sustainable extensive technologies of bovine fattening, which are friendly with the environment.

Also, bovine growing for meat production must be done in specialized farms for steer fattening, the only ones able to provide high quality animals and with a high live weight at slaughter.

(v)A better promotion of beef is also needed to make consumers to be aware that beef is a healthy food which must be included in a higher proportion in their diet.

(vi)A higher orientation to beef/veal export and mainly to meat bovine products including a higher value added (refrigerated and frozen beef) is also needed. In this way, export could become more effective than at present.

(vii)A better orientation of bovine meat export to the external partners where meat market is deficient, where meat price is higher and where pork is not a traditional food.

REFERENCES

[1] Analysis of the EU meat markets EU production and exports to Russia (2011-2013) Recent market trends, 2014, European Commission, 26 Sept.2014, http://ec.europa.eu/agriculture/russian-import-ban/pdf/meats-production_en.pdf, accessed Oct.30, 2016

[2]Banu, C., et al, 2009, Food Industry Treatise. Food technologies, Bucharest, ASAB, Publishing House: 113-117

[3]Commission of Carcass Classification, http://www.ccceurop.ro

[4]Ernst & Young, 2007, Evaluation of market measures in the beef and veal sector. Summary – short version, http://ec.europa.eu/agriculture/eval/reports/beef/short_sum_en.pdf, accessed 30 Oct.2016

[5]FAO, Meat Consumption, 2012, http://www.fao.org/ag/againfo/themes/en/meat/background.html, accessed Oct.30, 2016

[6]Grodea, M., 2016, Milk and beef production valatility in Romania-Domestic supply stability factor, Scientific Papers Series Management, Economic Engineering in Agriculture and Rural Development Vol. 16, Issue 1, 2016, 193-197

[7]Marquer Pol, Rabade Teresa, Forti Roberta, 2015, Meat production statistics, Eurostat, http://ec.europa.eu/eurostat/statistics-explained/index.php/Meat_production_statistics, Accessed Oct 30, 2016

[8]Meat Market Observatory-Beef and Veal, World Trade Bovine – Main Partners, 10.12 2016, http://ec.europa.eu/agriculture/market-observatory/meat/beef/doc/worldtrade_en.pdf, accessed Oct.30, 2016

[9]Meat Market Observatory – Beef and Veal, EU Bovine Production, 10 Sept.2016 http://ec.europa.eu/agriculture/market-observatory/meat/beef/doc/beef-production_en.pdf, accessed Oct.30, 2016

[10]Meat Market Observatory – Beef and Veal, EU Bovine Trade, 10.12.2016, http://ec.europa.eu/agriculture/market-observatory/meat/beef/doc/eu-trade_en.pdf, accessed Oct.30, 2016

[11]National Institute of Statistics, Data Base Tempo online, accessed 31 oct.2016, www.insse.ro

[12]Nistor, E., Bampidis, V., Tőzsér, J., Lymperopoulos, A., Ciolac, V., Baiduc, M., 2013, Beef production in Romania (2010-2012), Scientific Papers: Animal Science and Biotechnologies, 46 (2):318-321.

[13]Soare, E., 2015, Beef market in Romania, Scientific Papers Series Management, Economic Engineering in Agriculture and Rural Development Vol. 15, Issue 1, 2015, 493-500

[14]Stanciu, S., 2014, Romanian beef and veal meat market analysis, SEA - Practical Application of Science, Vol. II, Issue 2 (4) /2014, 381-389

[15]Topliff Mark, 2010, Overview of the EU Cattle Sector, AHDB Market Intelligence, Brisbane, June 2010

[16]USDA, Livestock and Poultry: World Markets and Trade, Oct.2016, http://apps.fas.usda.gov/psdonline/circulars/livestock_poultry.PDF, accessed Oct.30, 2016

[17]World Meat Markets at a glance, FAO World Food Outlook, 2014, http://www.fao.org/ag/againfo/themes/en/meat/background.html, accessed Oct.30, 2016