Scientific Papers Series Management , Economic Engineering in Agriculture and Rural Development
Vol. 14, Issue 1, 2014
PRINT ISSN 2284-7995, E-ISSN 2285-3952

THE COMPARATIVE ANALYSIS OF THE AGRICULTURAL PRODUCTION VALUE STRUCTURE DURING THE PRE AND POST ROMANIA'S EU ACCESSION PERIOD.

Nicolae STERGHIU[1], Raluca NECULA[1], Manea DRAGHICI[1]

[1]University of Agricultural Sciences and Veterinary Medicine Bucharest, 59 Marasti, District 1, 11464, Bucharest, Romania, Phone:+40213182564, Fax:+40213182888, Mobile:+ 40744647410; E-mail: nicolae.sterghiu@apia.org.ro, E-mail: raluca_nec@yahoo.com, E-mail: dmprofesor@hotmail.com

Corresponding author: raluca_nec@yahoo.com

Abstract

The agriculture development needs measures, and one of the main indicators that quantifies the results obtained is the value of agricultural production. In the present paper is studied this indicator through its structure in the vegetal, animal and agricultural services sector. It is also studied the impact of EU accession on agricultural production value. To capture the structural differences, the results are divided into two periods: the period 2001-2006, representing the period before EU accession and the period 2007-2012, representing the period after EU accession. To these data were added statistical calculations using the mean, the standard deviation and coefficient of variation to determine the homogeneity of the data.

***Key words*:** *agricultural production branch, agricultural services, animal production, crop production*

INTRODUCTION

After Romania joined the EU, the restructuring and approaching process to other countries agriculture progressed slowly without visible consequences in terms of structural and functional compatibility of the agricultural sector.

Besides the insufficient level of adaptation of the common agricultural policy in Romanian agriculture due to reduced capacity for absorption of both policies, viewed from the standpoint of increasing structural and functional compatibility, as well as from a financial standpoint (funds absorption for rural development) still need added the inadequacy adaptability of Romanian supply to the European market.

We wanted to study, however, changes occurred in the agricultural production sector value internally, observing oscillations during the post accession to EU in order to assess the impact of EU integration.

MATERIALS AND METHODS

Agricultural branch production is determined according to the Eurostat methodology on "Economic Accounts for Agriculture" and includes: the value of all agricultural production (including the production of wine produced in agricultural units that have no wine industrial installations), and the agricultural services performed by units specialized. Production of agri culture is expressed in basic prices (producer prices plus subsidies on products and less taxes on products) of each year [4].

The agricultural branch production value includes the value of crop production, livestock and services, at current and comparable prices.

Vegetal production volume is the production value (global yield of cultures) agricultural, which is expressed in current and comparable prices. For animal production volume is determined by the size of the live weight breeding and increasing reared young animals obtained under one year of growth, in the weight of mature animals obtained after fattening them and the quantity of milk, wool, eggs and other livestock products produced in the household of animals and birds use , which are not related to their killing.

Livestock production volume is expressed in current and comparable prices.

The global production at current prices also includes services for the value market (with pay), provided by enterprises serving agriculture and agricultural enterprises, households producing agricultural production and non-market services rendered by budgetary institutions and organizations.

In this paper we also used the following indicators: the arithmetic mean, standard deviation, coefficient of variation and statistical significance of these indicators.

The formulas used to calculate these indicators are presented below [2], [5]:

For arithmetic mean = $\overline{x} = \frac{\sum xi}{n}$; in which : $\overline{X}$ = arithmetic mobile mean ; Xi = average production values on a number of year (i);
n = the number of years taken into account.

For standard deviation = $\partial = \sqrt{\frac{\sum(\overline{x}-xi)^2}{n-1}}$; where: ∂ = standard deviation ; xi = average production values over a number of years, n = the number of years taken into account.

For the variation coefficient = $C = \frac{\delta}{\overline{X}} x100$,

where: C – the variation coefficient (expressed in percent). The coefficient of variation can be: between 0-10% - low variation, between 10-20% - middle variation, over 20% - large variation.

The data used have had as source: Statistical Yearbook of Romania, statistics from Eurostat, data from the specialized literature.

RESULTS AND DISCUSSIONS

1.The Pre-accession period of Romania to European Union 2001-2006.

A first aspect of the investigation was focused on the value control compared to the total production, which for 2001-2006 is shown in Table 1, with significant annual variations. It is found that crop production has the highest oscillation to the total, this level ranging between 57.26% and 68.87%. Animal production delineates to total agricultural production shares between 30.42% and 41.60%, the annual trends being also variable. Agricultural services through annual percentage levels means the lowest values , the tendency being of decrease in the period (2001-2004), followed by growth (2005-2006).

Table 1. The agricultural production value structure at the country level for the period 2001-2006

Specification	2001	2002	2003	2004	2005	2006
	%	%	%	%	%	%
Vegetal	*62.79*	*57.26*	*64.14*	*68.87*	*60.07*	*61.85*
Animal	*36.08*	*41.60*	*34.93*	*30.42*	*39.07*	*37.21*
Agricultural Services	*1.13*	*1.14*	*0.93*	*0.71*	*0.85*	*0.93*
Total	*100.0*	*100.0*	*100.0*	*100.0*	*100.0*	*100.0*

Source: Romanian Statistical Yearbook, 2003-2013; Agricultural statistics from Eurostat [1][3]

A detailed analysis is given below in Table 2, the annual indicators being presented in million Euro and % compared to 2001, with the completion of statistical indicators.

Table 2.The value evolution, at the country level, for agricultural production, in the period 2001-2006

Specification	MU	2001	2002	2003	2004	2005	2006	Average 2001-2006	Standard Deviation	Coef de var.
								mil €	mil €	%
Vegetal	mil €	6716	5786	6901	9399	7716	8888	7568	1376	*18,2*
	%	*100,0*	*86,1*	*102,8*	*139,9*	*114,9*	*132,3*	x	x	*x*
Animal	mil €	3859	4204	3759	4151	5019	5348	4390	646	*14,7*
	%	*100,0*	*108,9*	*97,4*	*107,6*	*130,0*	*138,6*	x	x	*x*
Agricultural Services	mil €	121	116	100	96	109	134	113	14	*12,5*
	%	*100,0*	*95,4*	*82,5*	*79,7*	*89,8*	*110,9*	x	x	*x*
Total	mil €	10697	10105	10760	13647	12844	14371	12071	1780	*14,7*
	%	*100,0*	*94,5*	*100,6*	*127,6*	*120,1*	*134,3*	x	x	*x*

Source: Romanian Statistical Yearbook, 2003-2013; Agricultural statistics from Eurostat [1][3]

The period values levels indicate a successive increase of total agricultural production value, in comparison to 2001 (in 2006 it reached 134.3%).Analyzed by components of this value structure (the vegetal, animal, service), you can find the same upward trend. Standard deviation (in million Euros) and the coefficient of variation (expressed as a percentage), delimits both overall and in the structure medium variations 10-20% (the coefficient of variation amplitudes being between 12.5%% for service and 18.2 for vegetal production).

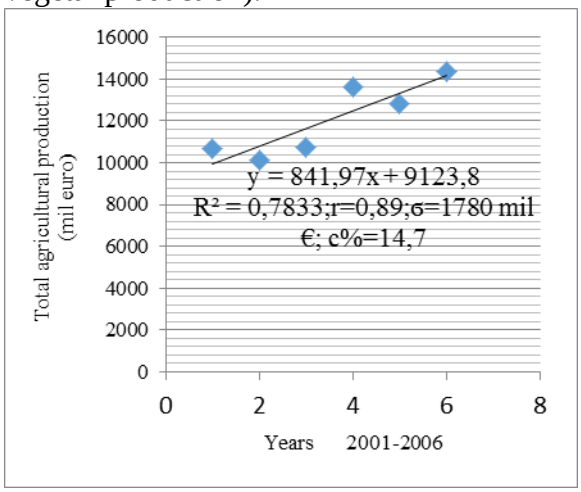

Fig.1.Total agricultural production evolution, at the country level, for the period 2001-2006

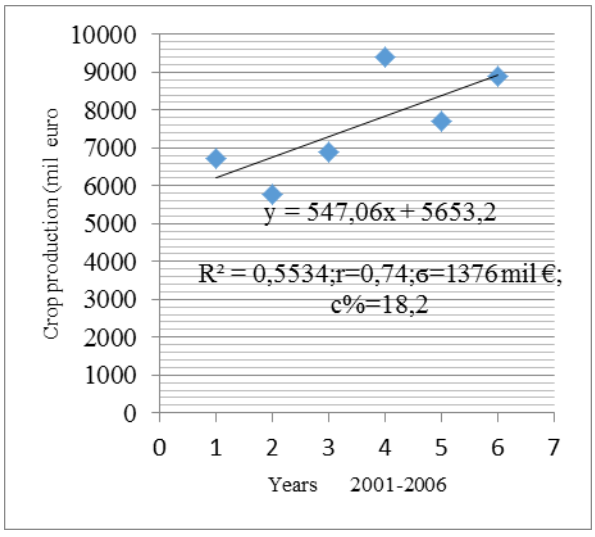

Fig.2. The crop production evolution, at the country level, for the period 2001-2006

These variation annual levels, were one of the reasons that further were used the regression equations at which the resulting factor is represented through the total agricultural output and production structure components (the vegetal, animal, services). In the Fig. 1 through the function is given the total agricultural production evolution (Y = 841.97 x + 9123.8), with the correlation report (r = 0.89), that is considered significant. In the fig. 2, the crop production evolution (y = 547.06 x + 5653.2) , the correlation report (r = 0.74) is also significant.

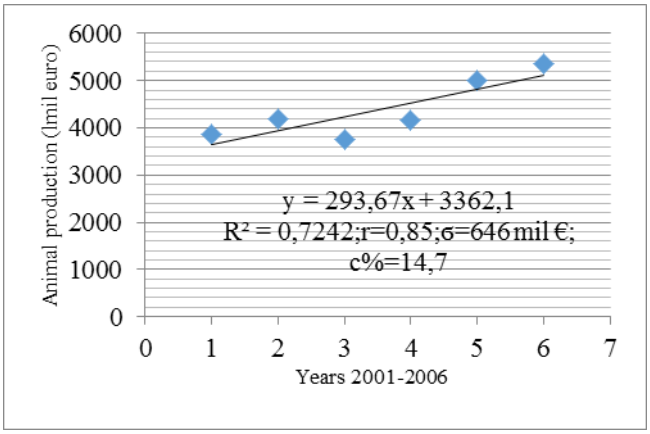

Fig. 3. The animal production evolution, at the country level, for the period 2001-2006

In Figure 3 is shown the animal production function (y = 293.6 x +3362.1) being also noticed the representative interpretation of correlation report (r = 0.85).

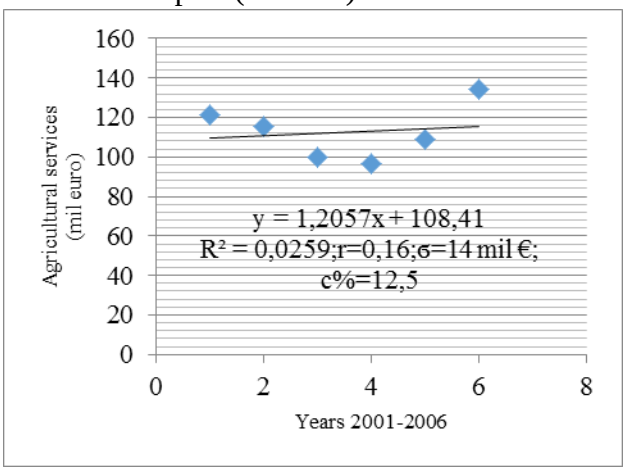

Fig. 4. The agricultural services evolution, at the country level, for the period 2001-2006

The function of the service sector shown in Fig. 4 (y = 1.2057 x +108.41) signifies an insignificant correlation report (r = 0.16).
It can be mentioned that the analysis of the correlation coefficient values is performed

with an amplitude between 14.7 and 18.2 which is a very small variation.

2. The period after-accession of Romania to European Union (2007-2012)

For Romania the evolution of agricultural production in value according to the structure shown in Table 3 of the main sectors reflects the varying levels of post-accession period.

On the whole country and vegetal sector there is a growing tendency, both in absolute terms and in comparison with 2007.

Animal production even if increases during 2008-2009, continues by a decrease.

The services for the entire period recorded decreasing levels (the decrease in 2012 compared to 2007 is -39.6%).

At the same time annual changes determine a coefficient of variation also differentiated: a small variation (0-10%) in animal production; variation middle (10-20%) in the total production and vegetal production; great variation at agricultural services (over 20%).

The evolutionary form of these levels was evaluated further by the tendency revealed according to some functions shown in Fig. 5 total agricultural output, Fig. 6 production vegetal, Fig. 7 animal production and Fig. 8 agricultural services.

Table.3.- The agricultural production value evolution at the country level for the period 2007-2012

Specification	MU	2007	2008	2009	2010	2011	2012	Average 2007-2012	Standard Deviation	Coef of var.
								mil €	mil €	%
Vegetal	mil €	8607	12421	8468	10161	12689	9294	10273	1868	*18,2*
	%	*100,0*	*144,3*	*98,4*	*118,1*	*147,4*	*108,0*	x	x	*x*
Animal	mil €	5481	5576	5555	4768	5102	5450	5322	321	*6,0*
	%	*100,0*	*101,7*	*101,3*	*87,0*	*93,1*	*99,4*	x	x	*x*
Agricultural Services	mil €	205	194	178	130	127	124	160	37	*23,1*
	%	*100,0*	*94,9*	*86,8*	*63,5*	*62,2*	*60,4*	x	x	*x*
Total	mil €	14293	18191	14201	15059	17918	14868	15755	1813	*11,5*
	%	*100,0*	*127,3*	*99,4*	*105,4*	*125,4*	*104,0*	x	x	*x*

Source: Romanian Statistical Yearbook, 2003-2013; Agricultural statistics from Eurostat [1][3]

The resulting correlation as the coefficient of correlation signifies that there is a correlation only for agricultural services.

CONCLUSIONS

The analysis on the value of agricultural production for the two periods generated the following conclusions:

1.For the total agricultural production we conclude that the pre accession period had registered spectacular increases over the years, but the impact of EU accession is positive, the data trend being an ascending one, the years average in the second period surpassed the first with 3683 million euro. The data shows a middle variation in both periods, we find however that after accession, the data have greater homogeneity.

2. Regarding the crop production, the average for the period 2007-2012 brought a plus of 2705 million compared to the average of the period 2001-2006 and the analysis by calculating the coefficient of variation shows a degree of scattering data with the same value for the two periods 18.2%, ie a middle variation.

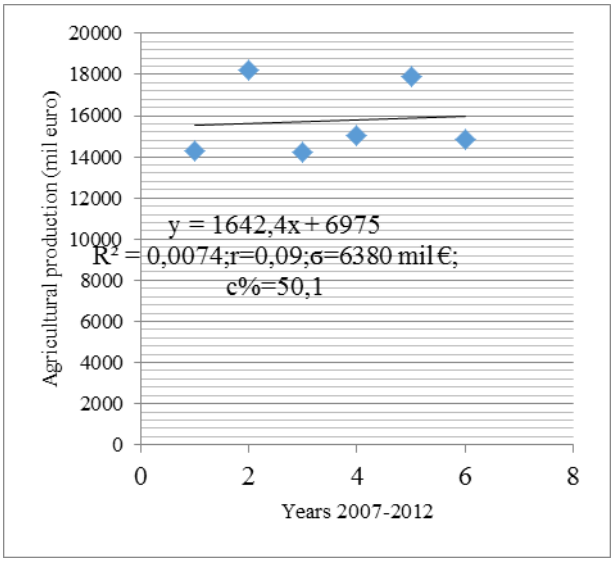

Fig. 5. The total agricultural production evolution, at the country level, for the period 2007-2012

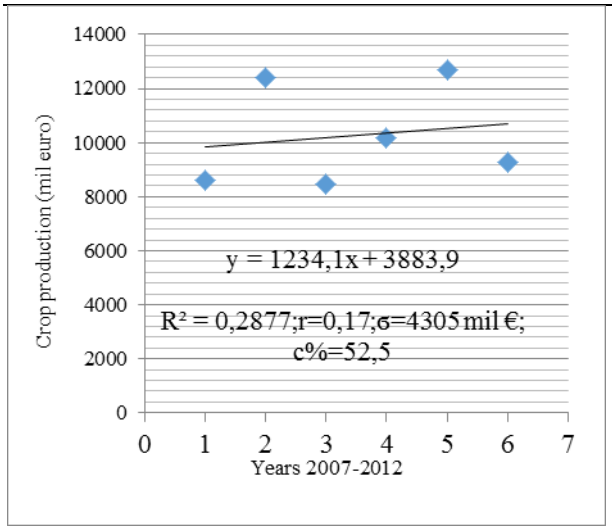

Fig.6. The crop production evolution, at the country level,for the period 2007-2012

3.The animal sector in the period 2007-2012 shows a slightly decreasing trend, with a small degree of data scattering, the coefficient of variation fits up to 10%, which demonstrates the increased stability of animal products capitalization.

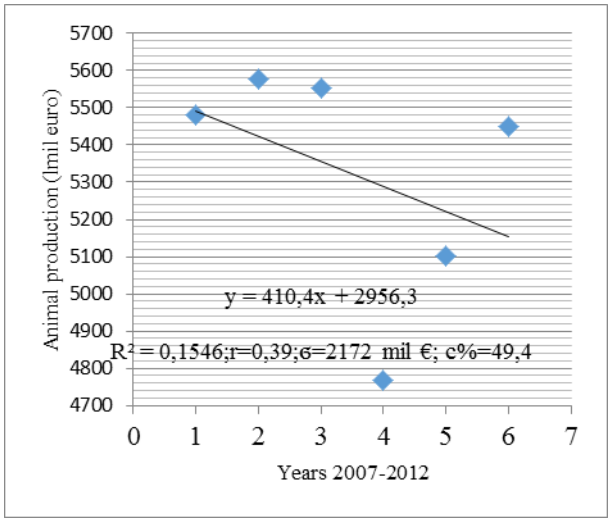

Fig.7. The animal production evolution , at the country level,for the period 2007-2012

4.The largest declines we see at agricultural services sector, the post-accession meaning a decline, especially between 2010-2012.

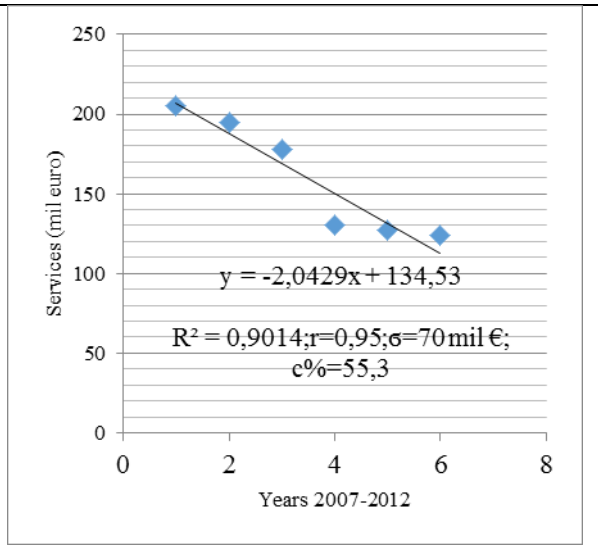

Fig.8. The agricultural services evolution , at the country level,for the period 2007-2012

REFERENCES

[1] Agricultural statistics, 2013 http://epp.eurostat.ec.europa.eu/portal/page/portal/statistics/search_database

[2]Ceapoiu, N., 1968, Applied statistical methods in agricultural experiments and statistical Ed.Agro-Silva, Bucharest 1968

[3]Romanian Statistical Yearbook, INS, 2003-2013.

[4]The production value in agricultural branch, National Institute of Statistics, the Press Office, Press Release, no. 176 of July 24, 2013

[5]The demographic growth, http://www.dictsociologie.netfirms.com/_IndDem/IndReproducere.htm