

CEREALS PRODUCTION INFLUENCE OVER THE TRADE BALANCE IN ROMANIA AND IN THE EUROPEAN UNION

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Abstract: *The paper presents the evolution of two indicators, cereals production and trade balance in Romania and in the European Union. The evolution was analyzed during eleven years from 2002 to 2012. Statistical methods have been used in order to establish the real and correct evolution of the indicators during the analyzed period. The paper also tries to demonstrate if there is any correlation between the indicators, using also statistical methods of analysis. There was applied a regression and correlation method, linear function. The results show that for Romania there is a direct correlation but a weak one. For the European Union the model shows that is a inverse proportion correlations.*

Key words: *cereals production, trade balance, correlation.*

1. Introduction

The crops structure in Romania, and particularly the vegetable production, is dominated by the cereals production. Agriculture surfaces of these crops represents 66% of the entire cultivated surface, each year [3].

Two of those, wheat and corn, traditional crops for the Romanian agriculture, have a significant proportion, namely 57% of the entire cultivated surface and 85% of the cultivated surface with cereals (in year 2010) [5].

As a result, the way in which the Romanian agriculture turns from the traditional economy to the market economy can be appreciated through the way in which that production of these crops is turned into food, particularly

through the dynamics of the wheat and corn quantities which are consumed from the producer.

Turning the cereals into food on the market is very important for the economy development and modernization.

2. The cereals production in Romania and in the European Union

In Romania, the evolution of the cereals production during the analyzed period 2002 – 2012 and the statistical analysis for this evolution is presented in Table 1 [2].

From the statistical analysis we can observe that, as regards the cereals production in Romania there was no continuous increase or decrease, the values fluctuated more or less from year to year.

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In year 2003 the cereals production meaning by 9, 67% as compared to the decreased with 1391,7 thousands of tones, previous year 2002.

Cereals production in Romania-(thousands of tones)

Table 1

year	Cereals production	$\Delta t/0$	$\Delta t/t-1$	$I_t/0$ [%]	$I_t/t-1$ [%]	$R_t/0$ [%]	$R_t/t-1$ [%]
2002	14355,9						
2003	12964,2	-1391,7	-1391,7	90,30	90,30	-9,70	-9,70
2004	24398,0	10042,1	11433,8	169,95	188,20	69,95	88,2
2005	19331,2	4975,3	-5066,8	134,66	79,23	34,66	-20,77
2006	15740,9	1385,0	-3590,3	109,65	81,43	9,65	-18,57
2007	7788,6	-6567,3	-7952,3	54,25	49,48	-45,75	-50,52
2008	16777,5	2421,6	8988,9	116,87	215,41	16,87	115,41
2009	14800,5	444,6	-1977	103,10	88,22	3,10	-11,78
2010	16651,3	2295,4	1850,8	115,99	112,50	12,5	12,50
2011	20776,9	6421,0-	4125,6	144,73	124,78	24,78	24,78
2012	12773,3	-1582,6	-8003,6	88,98	61,48	-11,02	-38,52

In the next year 2004 we can observe an increase with 10042,1 thousands tones, which mean by 69,95% more than in the same year 2002

In the following years there was a constant increase in cereals production, until in 2007.

In this year the production decreased with 65,67 thousands tones, meaning by 45,74%, comparison with the based year 2002

In the next four years the production of cereals increased again, the highest level being in 2008 with a production of 16777,5 thousands tones, by 2421,6 thousands tones more than in year 2002, meaning an increase by 16,87%.

The increase continues until in the last year in our study, 2012 when the production decreased by 1582,6 thousands tones, by 11, 02% less than in 2002.

If we compare each year with the previous year the evolution of the cereals production in Romania fluctuated during the analyzed period.

The highest production was in year 2004, namely 24398 thousands tones, by 11433,8 thousands tones more than in the previous year 2003 (88,20%).

Between years 2005 – 2007 we can observe that the cereals production decreased every year as compared to the previous year.

Thus in 2005 the production decreased by 5066,8 thousands tones, meaning by 20,77% less than in 2004, in 2006 by 3590,3 thousands tones less than in 2005, meaning a decrease by 18,57%. The most important decrease was in year 2007, when the cereals production was by 7952,3 thousands tones smaller than in the previous year 2006 which means by 50,52% less.

In the last year 2012 the cereals production decreased as compared to the previous year 2011 by 8003,6 thousands tones, meaning by 38,52% Mathematically speaking, on average, the cereals production of Romania, that of 16032,57 thousands tones, but, because of the fact that the values are so different and because the cereals production in Romania fluctuated a lot during the analyzed period the calculation of average indicators is not relevant.

The evolution of the cereals production in Romania is presented in Figure 1:

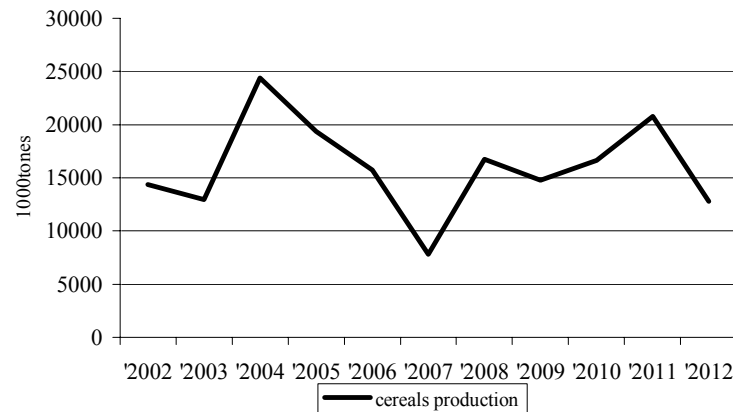


Fig. 1. *Cereals production evolution in Romania.*

From the graphic we may notice an increase tendency of the cereals production in Romania from 2003 until 2004, then a sudden decrease until 2007. After Romania became a member of the European Union the cereals production of the country

increased until 2011. After that in 2012 the cereals production was almost near the production obtained in 2003. In the European Union the cereals production during the same period 2002 – 2012 was as in Table 2 [2].

Cereals production in European Union-(thousands tones)

Table2

year	Cereals production	$\Delta t/0$	$\Delta t/t-1$	$I_t/0$ [%]	$I_t/t-1$ [%]	$R_t/0$ [%]	$R_t/t-1$ [%]
2002	211645,2						
2003	187164,2	-24481	-24481	88,43	88,43	-11,57	-11,57
2004	289911,1	78265,9	102746,9	136,98	154,90	36,98	54,90
2005	259352,1	47706,9	-30559,0	122,54	89,46	22,54	-10,54
2006	245191,2	33546,0	-14160,9	115,85	94,54	15,85	-5,46
2007	258902,1	47256,9	13710,9	122,33	105,59	22,33	5,59
2008	314227,2	102582,0	55325,1	148,47	121,37	48,47	21,37
2009	294719,5	83074,3	-19507,7	139,25	93,79	39,25	-6,21
2010	277373,2	65728,0	-17346,3	131,06	94,11	31,06	-5,89
2011	288731,4	77086,2	11358,2	136,42	104,09	36,42	4,09
2012	278762,9	67117,7	-9968,5	131,71	96,55	31,71	-3,45

At the European Union level we can observe that the evolution of the cereals production is not similar with the evolution of the same indicator in Romania. During the analyzed period there were not significant differences between years. Taking into consideration the comparison with the first year 2002 we can observe that

the cereals production decreased only in 2003, by 24481 thousands tones, meaning by 11,57%. On average, each year, cereals production in the European Union situated at a level of 264180,01 thousands tones.

The cereals production evolution in the European Union is presented in Figure 2:

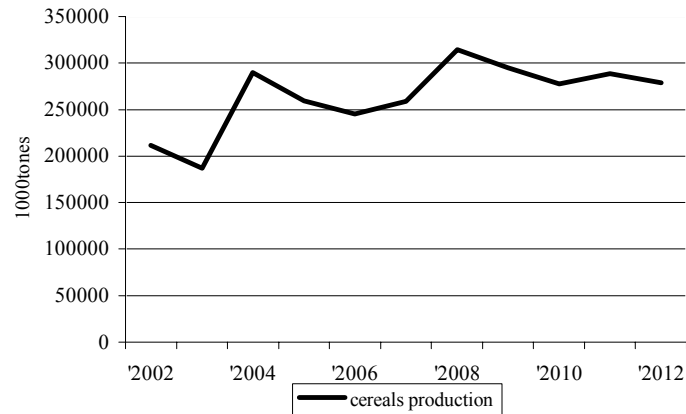


Fig. 2. *Cereals production evolution in the European Union.*

From the graphic we observe an increase tendency of the cereals production in the European Union starting with small fluctuations during the entire period without sudden increases or decreases. The largest quantity of cereals at the European Union level was produced in year 2008, reaching almost 320000 thousands tones.

3. The trade balance evolution in Romania and in the European Union

In Romania, statistical analysis of trade balance during the same period 2002 – 2012 shows us the following results presented in Table 3 [4].

Trade balance in Romania-(million euros)

Table 3

year	Trade balance	$\Delta t/0$	$\Delta t/t-1$	It/0 [%]	It/t-1 [%]	Rt/0 [%]	Rt/t-1 [%]
2002	-2042						
2003	-2700	-658	-658	132,22	132,22	32,22	32,22
2004	-3187	-1145	-487	156,07	118,04	56,07	18,04
2005	-4915	-2873	-1728	240,70	154,22	140,70	54,22
2006	-7647	-5605	-2732	374,49	155,58	274,49	55,58
2007	-15314	-13272	-7667	749,95	200,26	649,95	100,26
2008	-16069	-14027	-755	786,92	104,93	686,92	4,93
2009	-6867	-4825	9202	336,29	42,73	236,29	-57,27
2010	-6963	-4921	-96	340,99	101,40	240,99	1,40
2011	-7789	-5747	-826	381,44	111,86	281,44	11,86
2012	-8561	-6519	-772	419,25	109,91	319,25	9,91

In the analyzed period Romania registered adverse trade balance in each year from 2002 to 2012. Still from, 2008 start to recover the loss with a little increase but remaining adverse trade

balance [5]. The average situated at almost -7460 million euros. The evolution of trade balance in Romania during 2002 – 2012 is presented in Figure 3:

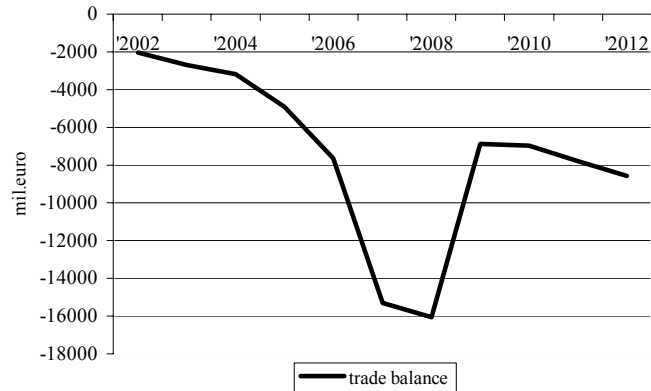


Fig. 3. *Trade balance evolution in Romania.*

From the graphic we observe that during the entire period Romania registered an adverse trade balance and registered the lowest level in year 2008. After Romania adhered to the European Union the situation started to improve even if

imports are still higher than exports.

In the European Union, during the same period the statistical analyze of trade balance reveals the following situation presented in Table 4.

Trade balance in the European Union-(million euros)

Table 4

year	Trade balance	$\Delta t/0$	$\Delta t/t-1$	$I_t/0$ [%]	$I_t/t-1$ [%]	$R_t/0$ [%]	$R_t/t-1$ [%]
2002	95806						
2003	90366	-5440	-5440	94,32	94,32	-5,68	-6,68
2004	76564	-19242	-13802	79,92	84,73	-20,08	-15,27
2005	69984	-25822	-6580	73,05	91,41	-26,95	-8,59
2006	77923	-17883	7939	81,33	111,34	-18,67	11,34
2007	63487	-32319	-14436	66,27	81,47	-33,73	-18,53
2008	73006	-22800	9519	76,20	114,99	-23,80	14,99
2009	64965	-30841	-8041	67,81	88,99	-32,19	-11,01
2010	70643	-25163	5678	73,74	108,74	-26,26	8,74
2011	66210	-29596	-4433	69,11	93,72	-30,89	-6,28
2012	71378	-24428	5168	74,50	107,80	-25,50	7,80

From the previous table we can observe that at the European Union level the trade balance was positive during the entire period. Also, we can see that the values are not so different from one year to another.

On average the trade balance at the European Union level is situated around 7575 million euros. In evolution, the trade balance of the European Union is presented in Figure 4:

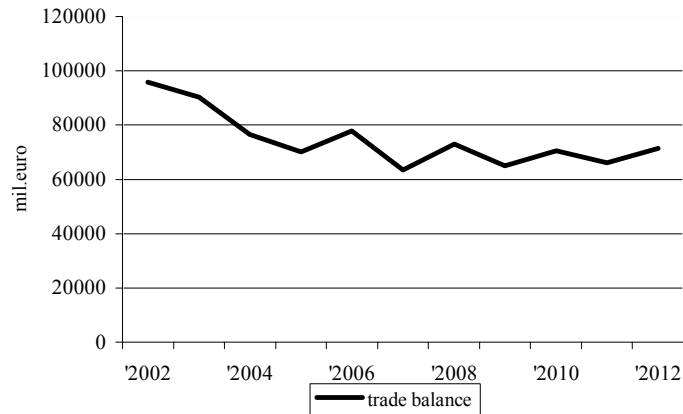


Fig. 4. *Trade balance evolution in the European Union.*

From the graphic we observe that during the entire period in the European Union registered a positive trade balance with a small decreasing tendency and almost linear

The highest value was registered in year 2002 and the lowest in 2007.

4. Correlation

The purpose of the paper was also to demonstrate if there is any correlation between the analyzed indicators, cereals production and trade balance, in Romania as well as in the European Union.

For that a statistical model of regression and correlation particularly linear function, was used.

For Romania the regression shows that there is a direct or positive link between analyzed indicators. The Pearson correlation coefficient has a value of 0,39 meaning that between the indicators there is a direct but weak correlation.

In that case, cereals production influences the trade balance in proportion of 15%, the rest of 85% being the influence of other factors.

For the European Union the situation is different. The Pearson correlation coefficient has a value of -0,76, meaning an indirect or negative correlation.

That means that cereals production influenced in a negative way trade balance in proportion of 58%, the rest of 42% being the influence of other factors.

References

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