THE INFLUENCE OF MACROECONOMIC FACTORS ON ARRIVALS IN RURAL TOURISTIC PENSIONS IN CRISANA REGION FROM ROMANIA – PART 1

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Abstract : In this study we present an econometric analysis of the number of arrivals in rural touristic pensions based on several indicators that we believe may affect in a positive or negative fluctuations of tourists. The analysis we perform for the period January 2006 - December 2013 with a quarterly frequency. We ordered and monthly values of most of the indicators selected, but we tried from start a reduction effect of seasonality.Given the emerging crisis in the second half of 2008, we expect basically after 2008 appear a decrease arrivals in rural touristic pensions, and after 2010, the year a slight recovery from the crisis appear improved this activity.For analysis we selected eight indicators: The average national unemployment; The average national inflation; The volume index of turnover for services provided to the population (hotels and restaurants); The volume index of turnover for services provided to the population (tourist assistance activities); Net use index of accommodation in rural guesthouses nationwide; Net use index of accommodation places in the region Crişana; Average gross salary at national level; GDP. So, in this study we have tried to analyze the influence of macroeconomic factors on rural touristic pensions arrivals in Romania Crisana region. This analysis will help owners of pensions in the management.In this paper we try to find the difficulties, limitations of rural tourism development in Crisana region from perspective of local government. In this paper we try to show as well the main factors of the emergence and development of rural tourism in order to establish priorities in the joint action of local people, entrepreneurs, tourists and local and national administrations. In many countries, the tourism industry fall within government priority. Tourism has been identified as one of the primary industries with potential to support local communities in developing economic diversity.

Key-words: *econometric study, rural tourism, Crisana, Romania*

JEL classification: M21, R11

1.Introduction. Choosing the variables and data collection

For this work we used official data from http://www.insse.ro. We chose to present quarterly indicators to highlight much better their seasonaly character. Following a preliminary analysis of the 8 independent variables were not validated only three: RMS, IUN and SALM. Values are presented in Table 1.

X_1 (RMS) - the independent variable - the average unemployment rate at national level, RMS, quarterly, %;

X_2 (IUN) - independent variable - net use index of accommodation in rural guesthouses nationwide, IUN, quarterly, %;

X_3 (SALM) - independent variable - gross average earning national SALMB monthly average quarter, in RON/month;

Y (SOSCR) - the dependent variable - arrivals region's rural tourist pensions Crişana

SOSCR, romanian and foreign tourists, in%, compared to the fourth quarter of 2005. Recall that the analysis is done from the first quarter of 2006.

Table 1. The values of the four variables analyzed, 2006-2013

Year	Quarter	X_1, %	X_2, %	X_3, RON/month	Y,%
2006	I	6.1	10.7	1073	75
	II	5.5	12.9	1114	102
	III	5	18.7	1131	175
	IV	5.1	13.5	1283	103
2007	I	5.1	13	1287	90
	II	4.2	15.4	1375	138
	III	3.9	19.6	1403	206
	IV	4.1	16.4	1574	173
2008	I	4.2	14.3	1601	170
	II	3.8	17.2	1731	208
	III	3.8	22.8	1749	249
	IV	4.2	18.1	1887	198
2009	I	5.2	12.6	1875	234
	II	5.8	14.2	1891	319
	III	6.6	17.8	1869	565
	IV	7.5	11.4	1923	268
2010	I	8.3	9.4	1994	244
	II	7.8	11.7	1962	497
	III	7.4	16.9	1853	783
	IV	7	11.2	1938	386
2011	I	6.5	9.8	1988	348
	II	5.1	12.8	2033	550
	III	4.9	19.2	2016	845
	IV	5.1	13	2090	439
2012	I	5.3	9.2	2059	439
	II	4.7	12.3	2130	845
	III	5	17.8	2129	1368
	IV	5.3	11.5	2218	624
2013	I	5.6	9.6	2171	523
	II	5	11.4	2245	720
	III	4.9	17.2	2234	1243
	IV	5.6	11	2313	654

Source: own achievement using data from website http://www.insse.ro

It can be noted that these indicators reflect the dynamics of income, unemployment and capacity utilization index of rural touristic accommodation establishments nationally and not necessarily in the region Crişana, and this is because both in terms of rural touristic flow and in terms of unemployment, the capacity utilization index of rural tourism and the average wage, Crişana region falls in national trends.
Moreover, most of the tourists are from other areas than Crişana and most likely their pattern corresponds to a pattern more national and not a regional one.
The econometric analysis will involve several steps:

1. Preliminary analysis of the data and their characterization in terms of periodicity, bivariate correlations between the dependent variable (SOSCR) and independent variables (IUN, RMS and SALM) and distribution;
2. Estimation and testing of the model parameters;
3. Validation of the model - testing hypotheses about the modeling error.

2. **The preliminary analysis**

The preliminary analysis of data dynamics and their characterization in terms of periodicity, the bivariate correlations between the dependent variable (SOSCR) and independent variables (RMS, IUN and SALM) and the distribution of values independent and dependent variables.

Data processing was performed using software Eviews 7. For the four variables, X_1, X_2, X_3 - independent and Y - dependent, we made histograms and calculated specific statistical values (the mean, the median value, the maximum value, the minimum value, the standard deviation, the asymmetry coefficient, the vaulting coefficient and then we calculated the coefficient of variation).

Variable X_1 (RMS) the average unemployment rate nationwide. The RMS indicator is characterized by a normal distribution as shown in the probability analysis associated to the Jarque-Bera analysis in Fig. 1 (accepting the null hypothesis (H_0) the tested variable has a standard normal distribution if prob. ≥ 0.05).

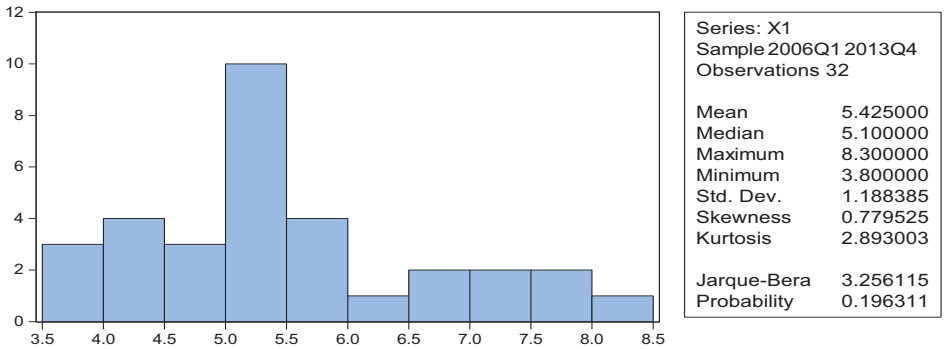

Figure1. Histogram independent variable X_1

Source: authors with the program EViews 7

From the presentation of the variable X_1 histogram, the unemployment rate, we conclude that the largest share of the values are located around the values of 5-5.5%, but there were more special situations, a very high rate, 8-8.5% in the first quarter of 2010 and a very low unemployment rate, 3.5-4% in quarters 2 and 3 of 2008.

The unemployment rate, by its nature, presents quarterly seasonality. From the analysis of variable waveforms RSM, fig. 2, it can be observed that the seasonality exists, the compounding law component can be considered to be additive (when the oscillations are approximately constant, whether the trend is rising or falling, it is recommended to use an additive composition laws of component time series). Deseasonalisation is usually done by the mobile average method, but we can user other more complex methods such as the Census X12, Tramo/Seats, X11, etc.. In the econometric modeling we will use the trend cycle component obtained by the Census X12 method, Fig. 3.

Figure 2. Original variable independent waveforms X_1 – in %
Source: authors with the program EViews 7

From the analysis of the RSM_TC dynamics, fig. 3. we can see that during the crisis, the third quarter of 2008 to the second quarter of 2010 has been a very strong increase in the unemployment rate from approx. 4% to approx. 8%, followed by a decrease to approx. 5.25% during the third quarter of 2010 to the second quarter of 2011.

Variable X_2 (IUN) the net use index of accommodation in rural guesthouses nationwide, IUN, is characterized by a normal distribution as shown by probability associated to the Jarque-Bera statistics in Figure 4.

From the presentation of variable histogram X_2, net use index of accommodation in rural guesthouses nationwide, it follows that the largest share of the values are located around the values of 11-12%, but there were more special situations, use indexes very high, 22-23%, in the third quarter of 2008 and net use index very low, between 9 and 10% in the first quarter of the years 2010, 2011, 2012 and 2013.

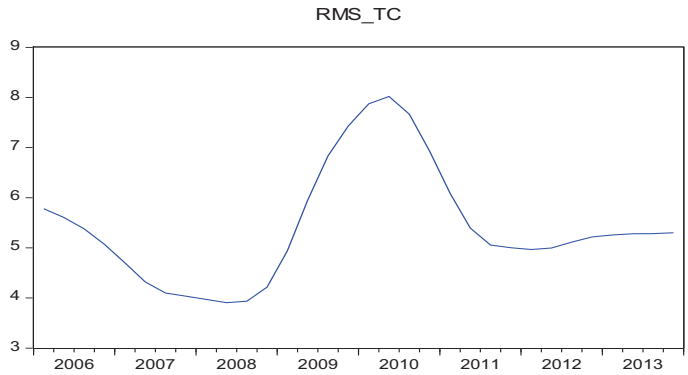

Figure 3. Variable waveforms X_1 – trend-cycle component - in %
Source: authors with the program EViews 7

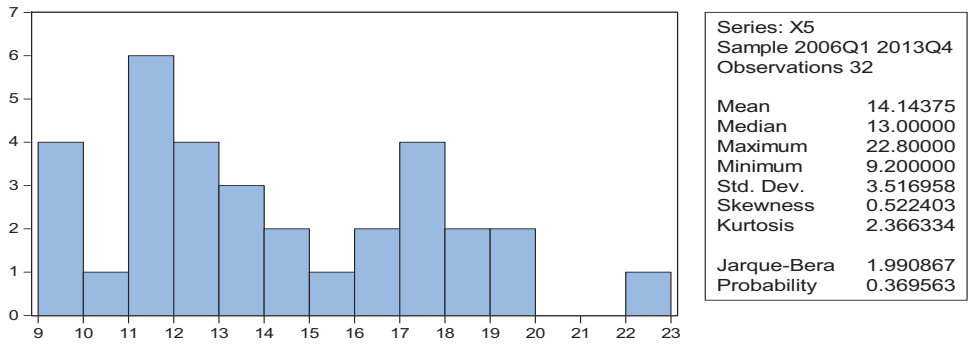

Figure 4. Histogram independent variable X_2
Source: authors with the program EViews 7

The visual analysis of variable waveforms IUN fig. 5, clearly reflects the existence of seasonality, compounding law is one additive component. In constructing econometric models it is recommended the isolation of the seasonal component and the use of the trend cycle component because the seasonal component by its nature is a variable carrier that can adversely affect the estimation of the parameters of the econometric model. In the breakdown of the components of a time series we used Census X12 seasonal adjustment method, as in the case of variable RMS.
After applying the Census X12 seasonal adjustment method, we will isolate the trend-cycle component, IUN_TC, which we will use in the econometric modeling. This is shown graphically in Figure 6.
From the analysis of waveforms corresponding to variable IUN_TC shown in Figure 6 we can see that there is an area for IUN_TC recession in period 2008 / first quarter-2010/fourth quarter followed by another recession within 2011/third quarter - 2013/fourth quarter.

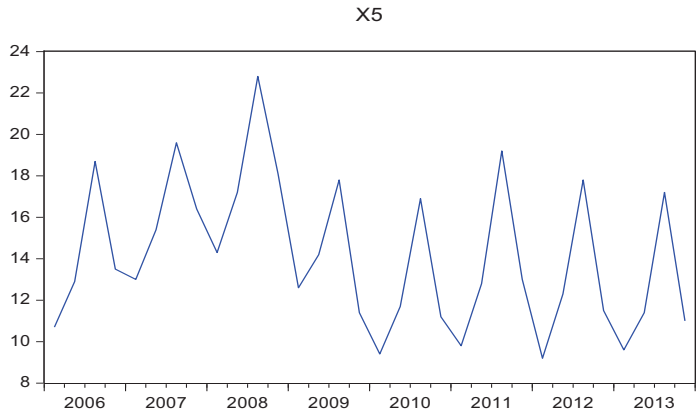

Figure 5. Original variable independent waveforms X_2
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Variable X_3 (SALM), average gross wage at national level in RON/month follows a normal distribution, fig. 7.

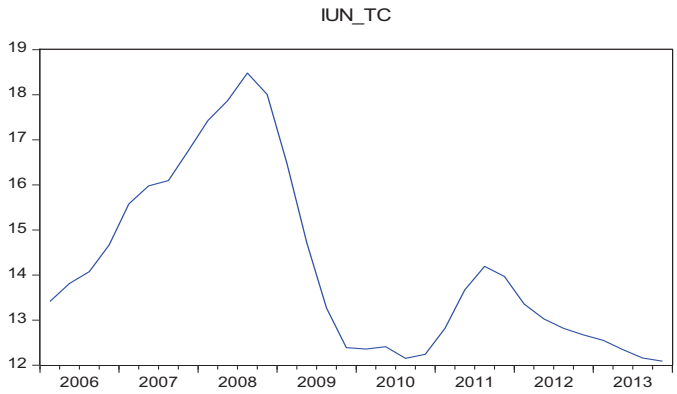

Figure 6. Variable waveforms X_2 – trend-cycle component
Source: authors with the program EViews 7

From the presentation of variable histogram X_3, gross earnings, calculated as an average for each quarter, we deduce that the largest share of the values are located around the values from 1800 to 2000 RON/month, but there were more special situations, higher wages than 2200 RON/month in 2013, and lower wages in the range of 1000-1200 RON/month for the first three quarters of 2006.
The average gross salary is a variable that shows seasonality, fig. 8, which can be removed by using the Census X12 method. Trend-cycle component of the variable dynamics SALM is shown in Figure 9. SALM trend cycle component can be seen that there is an upward trend with a slight brake of growth within the third quarter of 2009 - the third quarter of 2010.

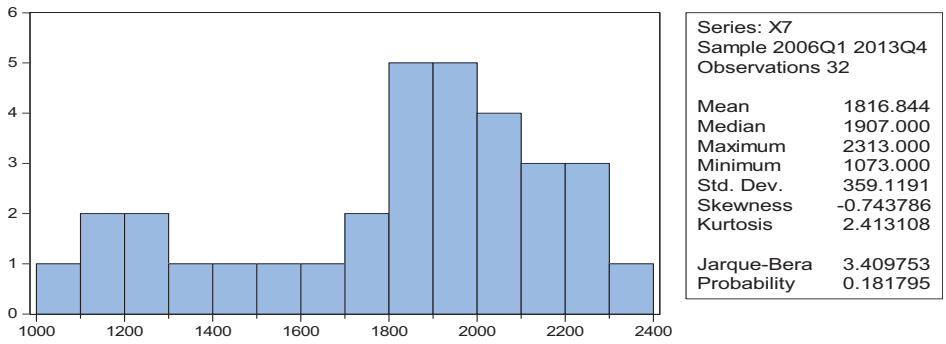

Figure 7. Histogram independent variable X_3
Source: authors with the program EViews 7

Variable Y (SOSCR) arrivals in the region's rural touristic pensions Crişana SOSCR, Romanian and foreign tourists, in %, compared to the fourth quarter of 2005. Recall that the analysis is done from the first quarter of 2006.
From the presentation of the dependent variable Y histogram we can see that the largest share of arrivals in rural touristic pensions Crişana region are located around values of 100-200% over the fourth quarter of 2005, but there were situations more special, more significant increases, 1200-1400% over the third quarters of the years 2012 and 2013, and only up to 100% in quarters I of 2006 and 2007.

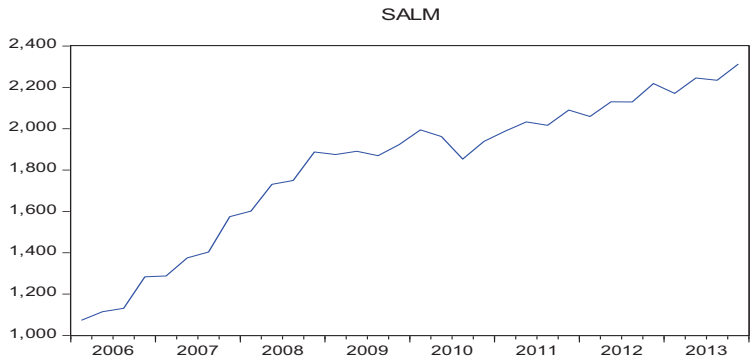

Figure 8. Original variable independent waveforms X_3 (SALMB), in RON/month
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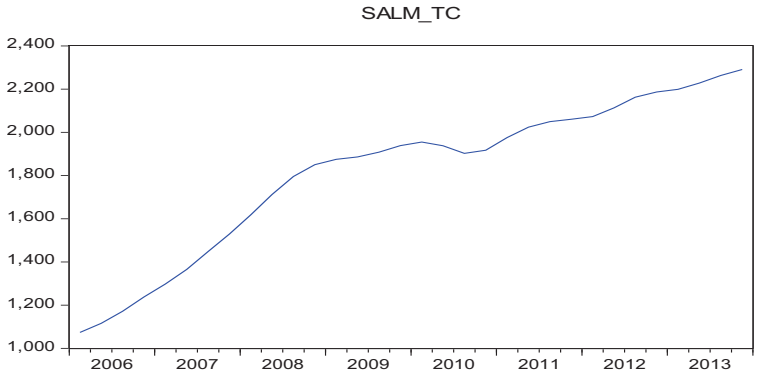

Figure 9. Variable waveforms X_3 – trend-cycle component
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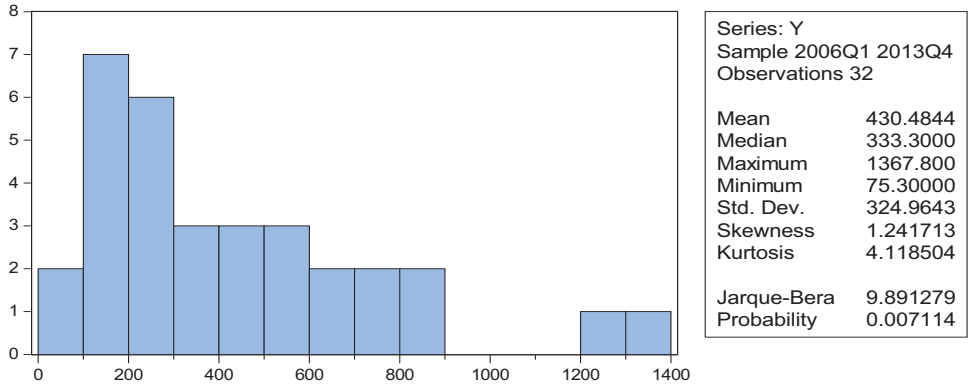

Figure10. Histogram dependent variable Y
Source: authors with the program EViews 7

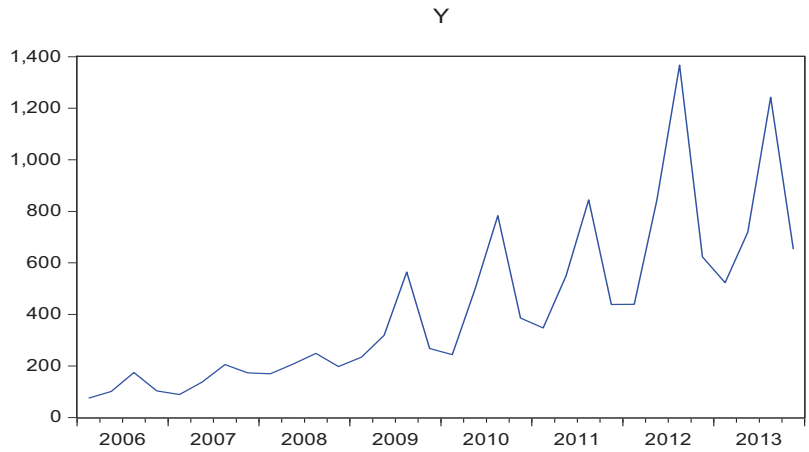

Figure 11. Original variable dependent waveforms Y
Source: authors with the program EViews 7

From figure 10 we can observe that the distribution of the variable SOSCR is not normal (prob = 0.007). The main reason seems to be the existence of a group of extreme positive values recorded in 2012-2013. From visual analysis of the cronodiagram in Fig. 11 one can see that indeed for 2012-2013 are recorded large amplitude fluctuations from one quarter to another until reaching an amplitude of oscillation of about 1000%.
From the analysis of the cronodiagram figure 11 it can be said that the series is composed multiplicative.
Following the decomposition of the Census X12 method, the trend-cycle component of the original series will present the dynamics of Fig. 12. From the graph we can see that the series shows an upward trend approximately linearly with a decrease in early 2008 and another fall more pronounced during the third quarter of 2012 - the second quarter of 2013.

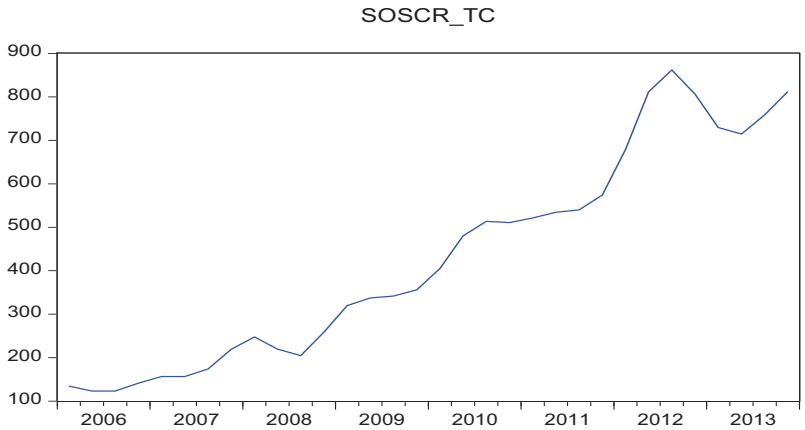

Figure 12. Variable waveforms Y – trend-cycle component
Source: authors with the program EViews 7

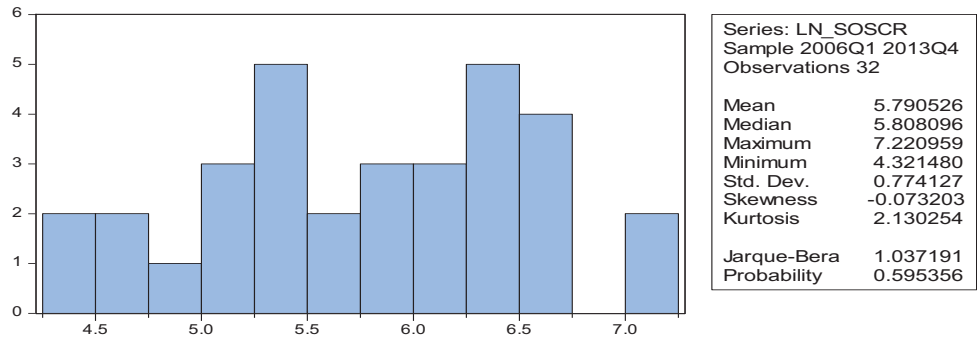

Figure 13. Histogram dependent variable ln(SOSCR)
Source: authors with the program EViews 7

SOSCR variable logarithm we obtain a new variable, LN_SOSCR, which this time has a normal distribution, as shown in Figure 13.
The dynamics of the new defined variable will look like the one in Figure 14. The new defined variable also presents seasonality only this time the composition scheme will not be a multiplicative but additive one.

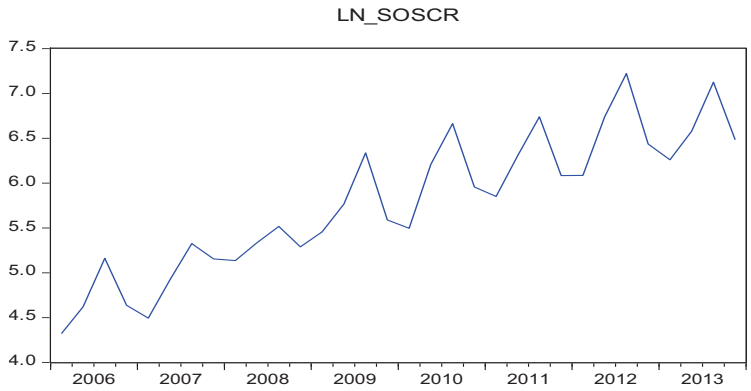

Figure14. Variable dependent waveforms Y
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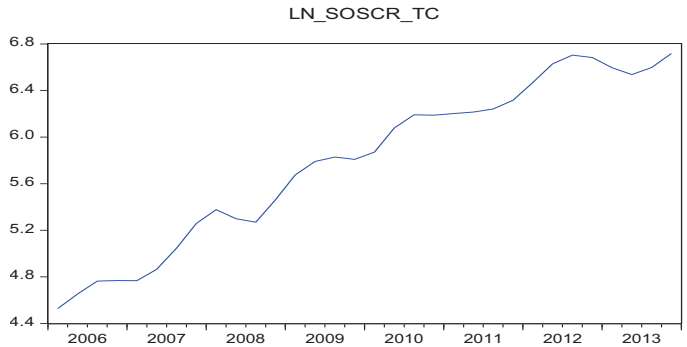

Figure15. Variable dependent waveforms ln(Y) – trend-cycle component
Source: authors with the program EViews 7
Trend cycle component resulting from the decomposition of the Census X12 method, based on an additive model, is presented in Figure 15.

3.Conclusions

From the econometric study of arrivals in rural pensions based on the three independent variables we can conclude that:

- overall, tourist arrivals in the region Crişana pensions are reverse proportional to the rate of unemployment, but we noticed that a very low unemployment rate does not increase the number of arrivals in rural guesthouses, tourists probably prefer a different type of tourism than in the areas;
- tourist arrivals pensions Crişana region follow approximately the same trend with average net earnings that in both indicators analyzed there is an increase in mean annual seasonality but still remains present and characterize the evolution of arrivals;
- in the analysis of the influence of the number of employees we can say that arrivals in rural tourist pensions Crişana region does not grow by increasing the number of employees. So in periods of economic development, and characterized by low unemployment and obviously an increase in the number of employees, tourists prefer another kind of tourism than in rural areas.

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