REGIONAL DIFFERENCES REGARDING TOURISM POTENTIAL AND ATTRACTIVENESS. A STATISTICAL-ECONOMETRIC APPROACH

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Abstract. In the work that follows, based on data from the Statistical Yearbook of Romania are analyzed a series of regional indicators, in order to highlight the differences between regions about the potential and attractiveness in terms of tourism. In the period under the present review the number of overnight stays registered a dramatic decline from a peak of 45.48 million recorded immediately after the changes in socioeconomic 1989-1990 to a low of 16.05 million recorded as a result of the economic crisis manifested in 2008-2010. The South East region, which contains two of the main tourist attractions in Romania - Black Sea and Danube Delta - has the highest share of total number of overnight stays for the entire period. Still visible is declining contribution of this region to the total overnight stays, the value decreased from 30% in 1990-2000 to 21% in 2013. After analyzing the evolution of the structure of tourists each year by developing region we can observe that trends are similar to overnight stays number, which explains to a certain extent that overnight stays, while containing worth and movements determined by the specificity and duties of the job, are directly influenced, as expected, by the amplitude of tourism activities.

Keywords: regional development, tourism activities, econometric analysis

JEL Classification: Z3

1. Overall considerations

In order to examine the differences between the Romanian regions with regard to tourism potential and attractiveness our analysis concentrated on the data provided by the Statistical Yearbook of Romania for a series of relevant indicators, as presented below.

1.1. The evolution of the number of nights spent at regional level

The number of nights is "every night when one person is registered in a tourist accommodation, whether or not physically is staying in the room. [2]"

The evolution of the total overnight stays in Romania between 1990 and 2013 is presented in Figure 1.

Figure 1. Evolution of total overnight stays in Romania during 1990-2013

$$y = -0,0103x^3 + 0,486x^2 - 7,132x + 50,365$$
$$R^2 = 0,8754$$
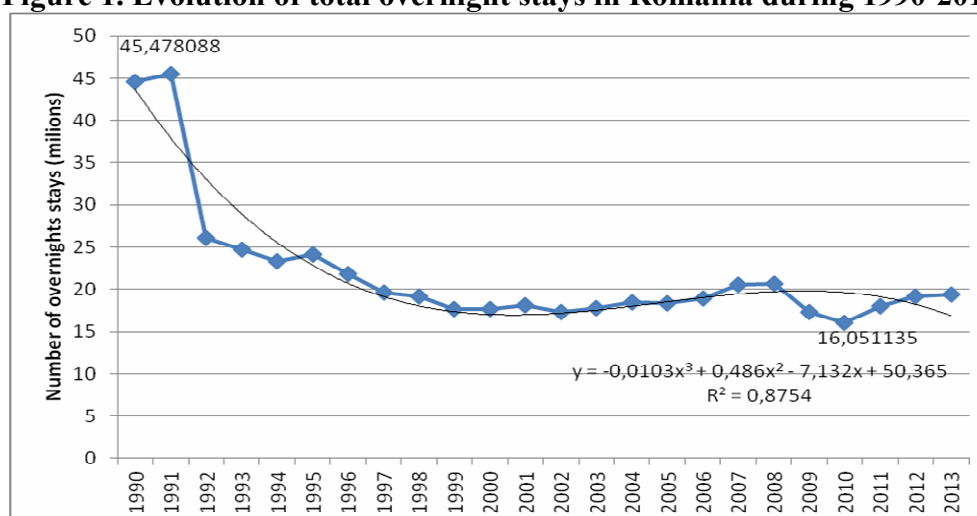
Source: Romanian Statistical Yearbook 2014

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[2] http://statistici.insse.ro/shop/index.jsp?page=tempo3&lang=ro&ind=TUR105E

In the period under the present review the number of overnight stays registered a dramatic decline, from a peak of 45.48 million recorded immediately after the changes in socioeconomic life in 1989-1990 to a low of 16.05 million recorded as a result of the economic crisis manifested in 2008-2010. Looking at Figure 1, in order to capture the dramatic fall in the number of overnight stays, progress indicator can be expressed by means of a model based on a Grade 3 polynomial function of time. Whereas in the whole country in nearly 25 years the number of overnight stays displays a maximum / minimum ratio of 3, one can see at the end of the period, from 2006 onwards, a stabilization of the indicator at around 20 million.

It is also worth noting that after the crisis an upward trend is observed, which could mean a revival of Romanian tourism. The small growth of the number of overnight stays has beneficial effects on the entire associated economy (i.e. increased demand for accommodation and local transport, stimulating demand for domestic products).

At the regional level the evolution of this indicator is different because of the multitude of factors that intervene on it (relief, climate, infrastructure, access, etc.). The structural contribution of each region to the number of overnight stays is presented in Figure 2.

Figure 2. The structural contribution of each region to the number of overnight stays
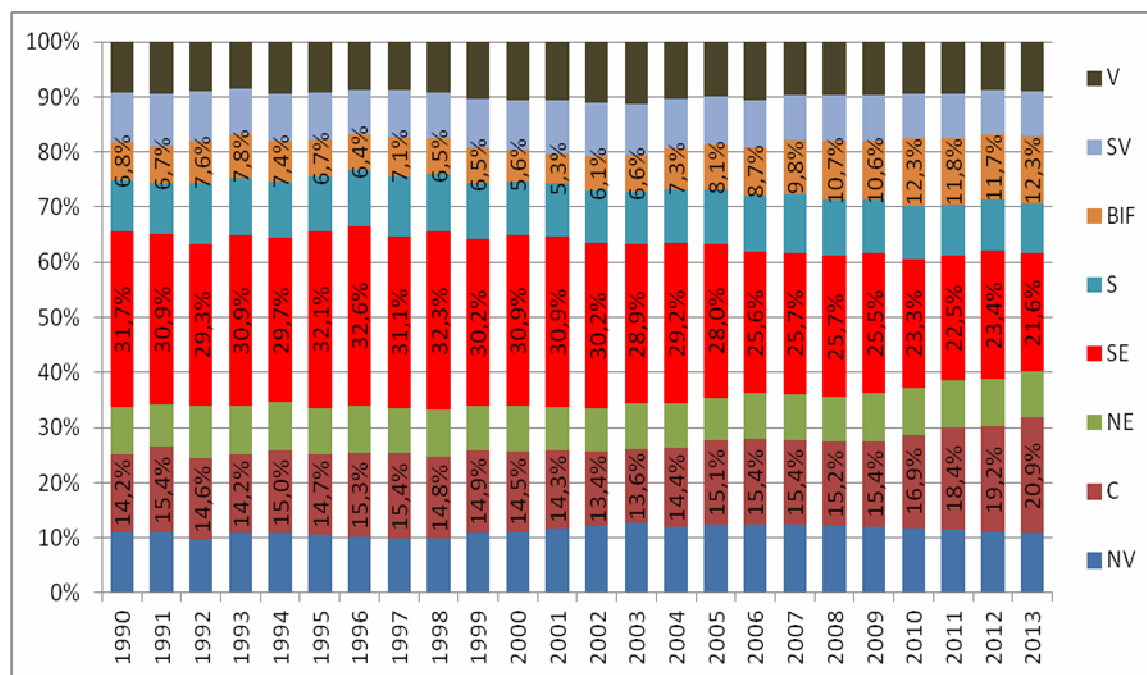
Source: INS – TEMPO Online

The results indicate that the South-East region, which contains two of the main tourist attractions in Romania - Black Sea and Danube Delta - has the highest share of total number of overnight stays for the entire period. Still visible is declining contribution of this region to the total overnight stays, the value decreasing from 30% in 1990-2000 to 21% in 2013. This downward trend of the   contribution of SE region should not be seen necessarily as a negative point in development of tourism in Romania. Otherwise, a larger number of overnight stays in other regions that initially had low levels of this indicator signifies a diversification of accommodation activities of tourist and economic interest. Two significant increases over the period analyzed are observed in the case of the Centre and Bucharest-Ilfov regions. In the Central region the increase is, most likely, due to a large extent to infrastructure development of already known resorts such as Brasov, Sibiu,

Tusnad, etc.. For Bucharest-Ilfov region the impact is determined by two different lines: one for tourism (restoration of the old center of Bucharest) and one of economic nature, the capital of Romania becoming one of the most important cities in Eastern Europe after Romania joined the European Union.

A possible explanation for changing the structure of the account number of overnight stays intensify in carrying out the work or tourism may be given after analyzing the number of tourists.

1.2. The evolution of the number of tourists during the analyzed period

According to the INS definition, the number of tourists accommodated in tourist accommodation establishments shall include all persons (Romanian and foreign) traveling outside the communities in which they reside, for more than 12 months and staying at least one night in an accommodation establishment in a visited tourist area in the country; in addition, the main reason for the trip is other than to carry out a paid activity in the visited places. The distribution of tourists by region is shown in Figure 3.

Figure 3. The structure of tourists by region during 1990-2013
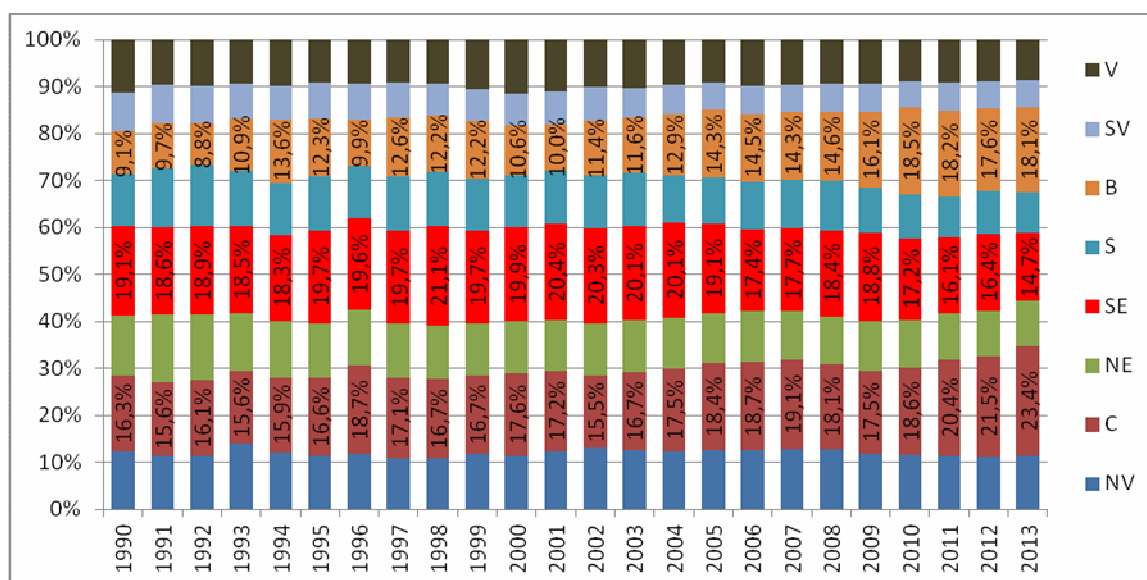
Source: INS – TEMPO Online

After analyzing the evolution of the structure of tourists each year by developing region we can observe that trends are similar to overnight stays number, which explains explains to a certain extent that overnight stays, while containing worth and movements determined by the specificity and duties of the job, are directly influenced, as expected, by the amplitude of tourism activities.

2. An econometric investigation
2.1. Data and methodology

A quantitative expression of the impact of the number of tourists at regional level on the change in the number of overnight stays can be delivered by estimating the parameters of a regression model between the two variables for a system of panel data consisting of 8 regions and 19 available years, thus summing a total of 152 observations.

Three models of analysis are specified, namely:

$$innopt_{it} = a + b * turisti_{it} + u_{it} \quad (1)$$

$$[\log(innopt]_{it}) = a + b[* \log(tourists]_{it}) + z_{it} \quad (2)$$

$$[\Delta \log(innopt]_{it}) = a + b[* \Delta \log(turisti]_{it}) + w_{it} \quad (3)$$

where *innopt* = number of stays registered in each region for the examined period; *turisti* = the number of tourists arriving in accommodation for whom the number of overnight stays has been cumulated; u, z, w = disturbing variables, alleged white noises, normally distributed. The model (3) is constructed and estimated on the basis of differences of order 1 of the variables specified in the model (2).

2.2. Results

The results are summarized in the following table*:

Dependent variable = number of overnight stays	Model 1	Model 2	Model 3
Number of tourists	3.04***	0.82***	0.73***
R^2	0.49	0.53	0.72
Durbin Watson Statistic	0.03	0.028	1.93

*** Significant parameter for a maximum 1% threshold
* Detailed results are presented in Appendix 1.

Source: Author's calculations by means of Eviews using data provided by TEMPO-INS, http: //statistici.insse.ro/shop/

The most suitable model is the model 3, built on the differences of order 1, which eliminates the autocorrelation phenomenon present in the case of the previous two models.

3. Conclusions

The analysis model shows a direct and intense relationship between the number of tourists and the number of overnight stays, the former determining a change in the number of overnight stays in proportion of 72%. Other factors that explain the rest of the remaining 28% are the length of stay, the economic component or travel for business purposes.

Selected Bibliography
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Appendix 1. The estimation of the parameters of a correlation model between the number of overnight stays and the number of tourists

Dependent Variable: INNOPT
Method: Panel Least Squares
Sample: 1995 2013
Periods included: 19
Cross-sections included: 8
Total panel (balanced) observations: 152

Variable	Coefficient	Std. Error	t-Statistic	Prob.
TURIŞTI	3.049636	0.249811	12.20778	0.0000
C	35796.94	204793.9	0.174795	0.8615

R-squared	0.498378	Mean dependent var	2370873.
Adjusted R-squared	0.495034	S.D. dependent var	1269421.
S.E. of regression	902062.7	Akaike info criterion	30.27583
Sum squared resid	1.22E+14	Schwarz criterion	30.31561
Log likelihood	-2298.963	Hannan-Quinn criter.	30.29199
F-statistic	149.0299	Durbin-Watson stat	0.030814
Prob(F-statistic)	0.000000		

1.

Dependent Variable: LOG(INNOPT)
Method: Panel Least Squares
Sample: 1995 2013
Periods included: 19
Cross-sections included: 8
Total panel (balanced) observations: 152

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LOG(TURIŞTI)	0.823521	0.062820	13.10914	0.0000
C	3.476755	0.847092	4.104342	0.0001

R-squared	0.533944	Mean dependent var	14.57718
Adjusted R-squared	0.530837	S.D. dependent var	0.420272
S.E. of regression	0.287867	Akaike info criterion	0.360435
Sum squared resid	12.43012	Schwarz criterion	0.400223
Log likelihood	-25.39308	Hannan-Quinn criter.	0.376598
F-statistic	171.8496	Durbin-Watson stat	0.028310
Prob(F-statistic)	0.000000		

2.

Dependent Variable: D(LOG(INNOPT))
Method: Panel Least Squares
Date: 02/22/15   Time: 23:47
Sample (adjusted): 1996 2013
Periods included: 18
Cross-sections included: 8
Total panel (balanced) observations: 144

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LOG(TURIŞTI))	0.731798	0.038220	19.14686	0.0000
C	-0.011936	0.003844	-3.104884	0.0023

R-squared	0.720803	Mean dependent var		-0.009303
Adjusted R-squared	0.718837	S.D. dependent var		0.086941
S.E. of regression	0.046100	Akaike info criterion		-3.302207
Sum squared resid	0.301783	Schwarz criterion		-3.260960
Log likelihood	239.7589	Hannan-Quinn criter.		-3.285446
F-statistic	366.6021	Durbin-Watson stat		1.936958
Prob(F-statistic)	0.000000			