ECONOMETRIC ANALYSIS OF SEASONALITY IN TOURISM ACTIVITY: ROMANIA VS BULGARIA

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Abstract
Economic agents in tourism businesses are interested in countering the effects of seasonality by encouraging tourists' arrivals outside the peak periods, reducing the major differences between seasons and extra-seasons.This paper compares the tourism situation in two neighbor countries with similar natural and economic conditions: Romania and Bulgaria, which are in a certain competition on the tourism market.
It is performed an econometric analysis of the quarterly net occupancy rate of bed-places in hotels and similar establishments in Romania and Bulgaria in the period 2012-2015, based on data provided by EUROSTAT.Seasonal component is identified for the two series based on the multiplicative model, then used in forecasting the indicator level for the next four quarters of 2016. The results indicate a greater influence of seasonal factors in tourism activity in Bulgaria, in the third and fourth quarters, than in Romania, but in opposite directions: a positive influence in the third quarter and a negative one in the fourth quarter. The difference in these quarters between seasonal indices in Bulgaria compared to Romania was of about 23-25%.

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Keywords
Tourism, Seasonality, Travel and tourism competitiveness index, Net occupancy rate of bed-places, Seasonal index,Multiplicative model.

JEL Classification
C10, C21, L83, Z32.

Introduction

Tourism is one of the areas in which the influence of seasonal factors - in various manifestations - leaves its marks on activities conducted. As such, the level and changes of the main indicators that measure the activity in the tourism sector are strongly influenced by seasonal factors, whether they appear as succession of weather conditions, or in the form of social customs and traditions (cultural, ethnicorreligious holidays or customs, school vacations, holidays) (Secareanu, C., Firoiu, D., 2012). Tourism data series have a seasonal

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component that needs to be identified, in order to obtain accurate and consistent with reality forecasts.
Economic agents in tourism businesses are interested in countering the effects of seasonality by encouraging tourists' arrivals outside the peak periods, reducing the major differences between seasons and extra-seasons.
Creating attractive tourist destinations throughout the year, advantageous tourism offers every time of year, addressing the different groups of tourists which can travel at different times of the year, informing, promoting and communicating these opportunities through various channels - come to support the attenuationof the seasonal effect in tourism domain.
Butler and Mao (1997) identified two sides of seasonality in tourism: natural side (related to climatic conditions) and institutional side (socio-cultural) and showed how these factors influence the generating regions and the destination ones.
Lee,et.al. (2008) - after reviewing the significance of the seasonality concept - identified a series of strategies through which both generating and recipient countries with respect to the tourism activity, may improve the effect of seasonality. The study is primarily useful by the fact that it includes an assessment of the utility and efficiency of the strategies identified, with examples on Australian regions.They concluded that strategies aimed at countering the effects of seasonality should not rely solely on economic grounds, but also on social and environmental factors, and that their implementation must involve all stakeholders.Claveria,et.al. (2015) investigated the effectiveness of various seasonal time series models applied in tourism, in developing accurate forecasts.Cisneros-Martínez, J.D. used a methodology based on the decomposition of Gini concentration index, in order to measure the concentration of seasonal tourism, applicable mainly in coastal tourist destinations.
This paper confronts the tourism situation in two neighbor countries with similar natural and economic conditions: Romania and Bulgaria. However, they are in a certain competition on the tourism market, but each has something to learn from each other.Competitiveness in tourism is a lesson that Bulgaria has learned it better than Romania, as indicated by analysis of the Travel & Tourism Competitiveness Index, proposed by the World Economic Forum. In the paper it is performed an econometric analysis of the quarterly net occupancy rate of bed-places in hotels and similar establishments in Romania and Bulgaria in the period 2012-2015, based on data provided by Eurostat.Seasonal component is identified for the two series based on the multiplicative model, then used in forecasting the indicator level for the next four quarters of 2016. The results indicated a greater influence in Bulgaria of seasonal factors in tourism activity in the third and fourth quarters than in Romania, but in opposite directions: a positive influence in the third quarter and a negative one in the fourth quarter. The difference in these quarters between seasonal indices in Bulgaria compared to Romania was of about 23-25%.

Romania and Bulgaria: towards a competitive tourism - strengths and weaknesses

Romania is an offering country in terms of geographical position, natural resources, cultural potential and human capital. However, Romania did not know how to capitalize these advantages, so it ranks behind Bulgaria in the analysis in tourism domain.Even more as general economic indicators have higher values for Romania (population, GDP, GDP per capita). One way that Romania could increase the efficiency of tourist activity is to create a competitive tourism (Croitoru, M., 2011).A competitiveness analysis in tourism domain was performed by the World Economic Forum, who proposed, in 2007, the "Travel and

Tourism Competitiveness Index", as a quantitative measure of the effects of policies and factors that *„enable the sustainable development of the Travel & Tourism sector, which in turn, contributes to the development and competitiveness of a country" (....)* (World Economic Forum, 2015).The methodology addresses four main aspects of competitiveness in tourism, highlighted by four subindices, detailed through 14 pillars. The four subindexes refer to**:** Enabling Environment**,** Travel andTourism Policy**,** Infrastructure and the Natural and Cultural Resources**.**In 2015 Bulgaria was ranked 49th out of 141 countries (with a score of 4.0 out of 7), while Romania was ranked 66th (with a score of 3.8 out of 7). In both countries the index level has evolved on a downward trend since 2011. Bulgaria has registered higher scores on all four subindices. Of these, both Romania and Bulgaria have recorded better scores for *Enabling Environment Subindex* (5.1 – Bulgaria, 4.9 – Romania), while lower scores were recorded for *Natural and cultural conditions Subindex* (2.7 – Bulgaria, 2.4 – Romania). The weakest position in the ranking was recorded by Romania in terms of *infrastructure*(rank 71 out of 141 countries), while Bulgaria was ranked 52th (fig. no. 1).

Figure no. 1 The four subindices of Travel&Tourism Competitiveness Index in 2015, Romania and Bulgaria

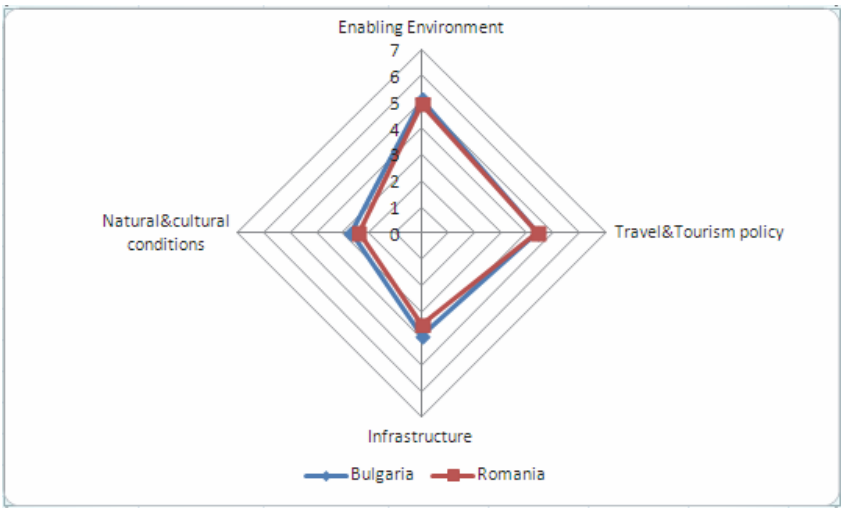

Figure no. 1 The four subindices of Travel&Tourism Competitiveness Index in 2015, Romania and Bulgaria

Source: authors' processing, based on data provided by The Travel & Tourism Competitiveness Report 2015, World Economic Forum, 2015, p. 5, p. 10-13.

The largest score-difference between the two countries was registered in the area of infrastructure (0.4 points in favor of Bulgaria), while in terms of policies in tourism both countries were approximately at the same level (4.4 out of 7).

Seasonal Analysis of Net Occupancy Rate of Bed-Places in Romania and Bulgaria

The analysis aims at determining the seasonal component of the time series referring to the "Net occupancy rate of bed places in hotels and similar accommodation", at identifying the way the seasonal factors have influenced the evolution of this indicator in Romania and Bulgaria and at achieving a more accurate prediction of net occupancy rate for the next four quarters of 2016.Based on monthly data provided by EUROSTAT, there were calculated quarterly values of the indicator, corresponding to the period 2012-2015. The processing was performed with SPSS program.

Under the influence of seasonal factors, in 2015 net occupancy rate in hotels and similar accommodation recorded the highest values in the 3rd quarter, of 51.43% in Bulgaria and 41.13% in Romania. With respect to the minimum values of the indicator, these were recorded in different quarters. Thus, in Romania the minimum net occupancy rate was recorded in the first quarter (23.33%), while in Bulgaria it was recorded in the fourth quarter (21.2%).

Despite the seasonal fluctuations, in period 2012-2015 net occupancy rate had a slightly upward trend in Romania and a slightly downward trend in Bulgaria. In the first, second and third quarters the indicator had higher values in Bulgaria compared to Romania, while in the fourth quarter the situation was reversed. The difference between the net occupancy rates in the two countries was the highest in the third quarter, but one can observe a weakening of the differences over the period considered (so, if the net occupancy rate in the third quarter of 2012 in Bulgaria was by 19.23% higher than in Romania, in the third quarter of 2015 the difference was down to 7.3%).Accordingly, in the fourth quarter the net difference in favor of Romania increases over the period analyzed. Thus, in the fourth quarter 2012 the net occupancy rate was by 3.3% higher in Romania than in Bulgaria, the difference reaching at the end of the period the value of 10.86% (fig. no. 2).

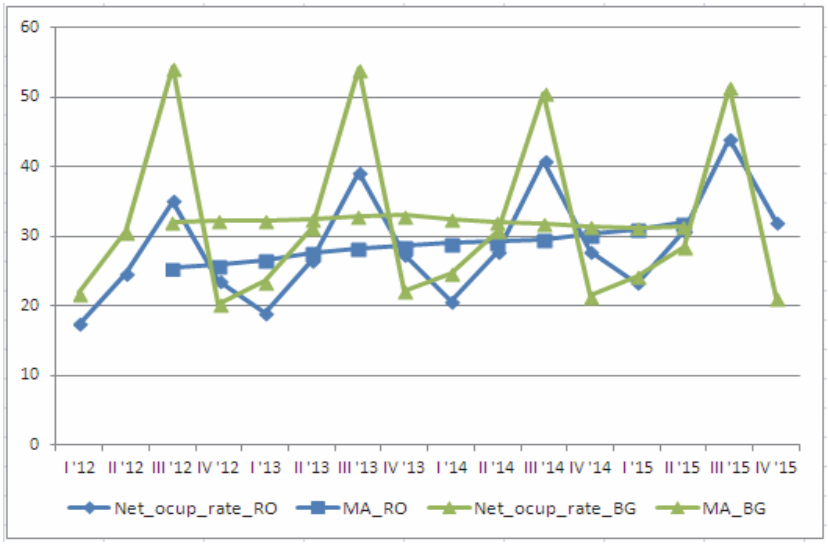

Figure no. 2 Quarterly Net Occupancy Rate of Bed Places (%), 2012-2015, Romania and Bulgaria. Observed values and moving-averages

Source: Authors' processing, based on EUROSTAT data

In order to identify the components of the time series, it has been applied the seasonal decomposition method – multiplicative model. For Romania, in the first quarter, the lowest value of seasonal indices was recorded (72.1%), revealing that the seasonal factors determined a decrease in the net occupancy rate by 27.9% from the trend value. In the 2nd and the 4thquarter, the seasonal indices value were close to 1, showing that the seasonal factors influence was rather small (96.8% and 92.2%). The highest seasonal index corresponds to the third quarter (139%), pointing out that the seasonal factors determined an increase in the net occupancy rate by 39% above the trend (fig. no. 3)

Model Description

Model Name	MOD_1
Model Type	Multiplicative
Series Name 1	Net_occup_rate_RO
Length of Seasonal Period	4
Computing Method of Moving Averages	Span equal to the periodicity plus one and endpoints weighted by 0.5

Applying the model specifications from MOD_1

Seasonal Factors

Series Name: Net_occup_rate_RO

Period	Seasonal Factor (%)
1	72,1
2	96,8
3	139,0
4	92,2

Figure no. 3 The application of multiplicative model and the seasonal indices – Romania

Source: performed bybthe authors, based on EUROSTAT data

Compared to these results, in Bulgaria the seasonal index was higher in the 1st and the 3rd quarter than in Romania. Thus, in the 3rd quarter the seasonal factors implied a significant increase in the net occupancy rate level – of 62.8% above the trend. It may be remarked a significant negative seasonal influence in the 4th quarter, when the indicator value recorded a major decrease – of 33.3% below the trend line.These results can be explained by the massive flow of non-resident tourists arriving in the third quarter in Bulgaria, attracted by a wider variety of tourism offers, by more attractive prices, by a higher service quality and by a better quality/price ratio. In the fourth quarter, this flow is smaller and it is not compensated by the participation of domestic tourists in tourism activity. Unlike the above mentioned situation, in Romania the higher value of the seasonal index in the fourth quarter is explained by the fact that - although Romania does not enjoy a share of foreign tourists as important as Bulgaria, this is compensated through a higher participation rate of resident tourists in tourism activity (fig. no. 4).

Figure no. 4 The application of multiplicative model and the seasonal indices – Bulgaria

Model Description

Model Name	MOD_2
Model Type	Multiplicative
Series Name 1	Net_ocup_rate_Bulg
Length of Seasonal Period	4
Computing Method of Moving Averages	Span equal to the periodicity plus one and endpoints weighted by 0.5

Applying the model specifications from MOD_2

Seasonal Factors

Series Name: Net_ocup_rate_Bulg

Period	Seasonal Factor (%)
1	75,3
2	95,2
3	162,8
4	66,7

Figure no. 4 The application of multiplicative model and the seasonal indices – Bulgaria

Source: authors' processing, based on EUROSTAT data

The values of seasonal adjusted series were determined, in order to provide a forecast of the net occupancy rate for the next four quarters in 2016. The prediction shows a slight increase of quarterly net occupancy rate in Romania, in hotels and similar accommodation establishments, especially in the 2nd and the 3rd quarters (by 4.64% in the third quarter 2016, compared to the third quarter 2015)(fig.no. 5 and table no. 1).

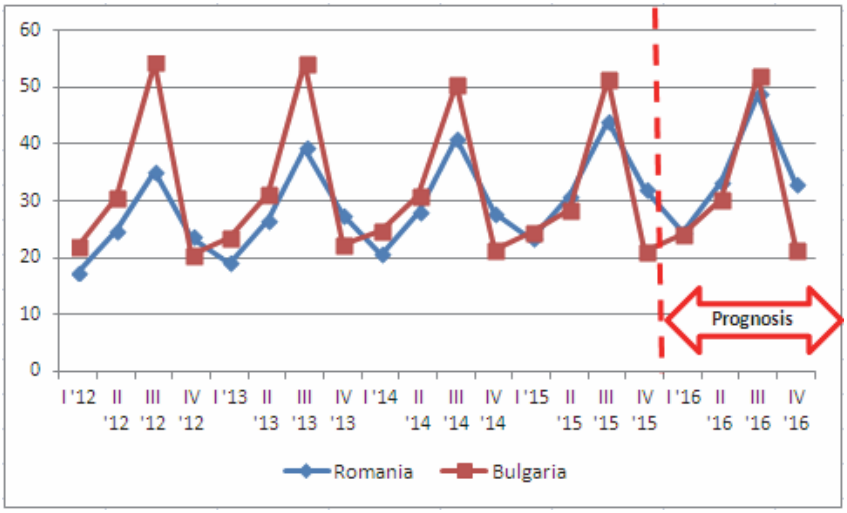

Figure no. 5 Prognosis of the quarterly net occupancy rate in hotels and similar accommodation, 2012-2016, in Romania and Bulgaria

Source: authors' processing, based on EUROSTAT data.

For Bulgaria smaller increases of the quarterly net occupancy rates are expected, according to our predictionin the second, third and fourth quarters (slightly higher increses in the second quarter, of almost 2 percentage points), but also a slight decrease for the first quarter 2016 (fig.no. 5 and table no. 1).

Table no. 1Prognosis of Quarterly Net Occupancy Rate (%) in Romania and Bulgaria

Prognosis Period	Prognosis of Net Occupancy Rate (%)	
	Romania	Bulgaria
Q I 2016	24.42	24.02
Q II 2016	33.37	30.39
Q III 2016	48.75	51.99
Q IV 2016	32.89	21.31

Source: authors' processing, based on EUROSTAT data.

Scenario applies ifthe net occupancy rate of bed-places in hotels and similar accommodation establishments evolves in economic and social conditions similar to those in the period analyzed, who influences the tourists' behavior and the tourism activity in a country. Romanian tourism can improve its position against Bulgarian tourism by increasing competitiveness, highlighting itsgenerous natural resources. To do so, Romania must join the long run worldwide tendency of sustainability in tourism activity, by adopting legislative measures to protect the environment, by promoting and revealing the natural and cultural environment, by improving infrastructure and quality of services in tourism, but also by setting more attractive tourism offers, with a better quality to price ratio.

Conclusions and future work

The seasonality problem in tourism has a major importance for both the origin and the destination regions, being dedicated to it numerous studies and analyzes in the specialized literature. Identifying the seasonal component of a time series might be useful in providing accurate predictions. Comparative situation of Romanian and Bulgarian tourism has pluses and minuses that place them in permanent competition with one another. Tourism in Bulgaria enjoy a more favorable situation than in Romania, managing to attract more non-resident tourists, especially in the third quarter, by promoting better travel offers, higher quality services, more flexible and diverse offers, with a better quality/price ratio, assigned for groups of tourists with varied needs. Analyzing theTravel and Tourism Competitiveness Index, it was revealed that Bulgaria was ranked better than Romania in 2015, with respect to the tourism competitiveness level (49th rank, compared to 66th,out of 141 countries). Of the four main aspects surprised by this index, both countries had a higher score in 2015 regarding general conditions that facilitate the development of economic activities (business environment, safety and security, health and hygiene, human resources and labour market, information and communication channels). The lowest score was recorded by both Bulgaria and Romania with respect to the natural and cultural resources, which shows that both countries still need investments for preservation and maintenance of natural and cultural resources, and new strategies for promoting tourist attractions.

Analyzing the quarterly values of the net occupancy rates in hotels and similar establishments in the two countries, one can remark that - despite the seasonal fluctuations - in period 2012-2015 the indicator level had a slightly upward trend in Romania and a slightly downward trend in Bulgaria. In the first, second and third quarters the net occupancy rate had higher values in Bulgaria compared to Romania, while in the 4th quarter the situation was reversed.

In order to identify the components of the time series, it has been applied the seasonal decomposition method – multiplicative model. Romania recorded the lowest value of seasonal indices in the first quarter(72.1%), revealing that the seasonal factors determined a decrease in the net occupancy rate by 27.9% from the trend value. In the 2nd and the 4thquarter, the seasonal indices value were close to 1, showing that the seasonal factors influence was rather small (96.8% and 92.2%). The highest seasonal index corresponds to the third quarter (139%), pointing out that the seasonal factors determined an increase in the net occupancy rate by 39% above the trend.Compared to these results, in Bulgaria the seasonal index was higher in the 1st and the 3rd quarter than in Romania. It may be remarked a significant negative seasonal influence in the 4th quarter, when the indicator value recorded a major decrease – of 33.3% below the trend line.

The values of seasonal adjusted series were determined, in order to provide a forecast of the net occupancy rate for the next four quarters in 2016. Compared to the situation in 2015, the prediction shows a slight increase of quarterly net occupancy rate in Romania, in hotels and similar accommodation establishments, especially in the 2nd and the 3rd quarters. For Bulgaria – compared to 2015 - smaller increases of the quarterly net occupancy rates are expected, according to our prediction in the second, third and fourth quarters, but also a slight decrease for the first quarter 2016.

The seasonal analysis will be extended to other tourism indicators, and other econometric models will be taken into consideration, in order to provide more accurate predictions for the tourism environment in the two countries.

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