

IMPACT OF TOURISM ON EMPLOYMENT: AN ECONOMETRIC MODEL OF 50 CEEB REGIONS AGUAYO, Eva*

Abstract

In this paper we analyse the economic impact of tourism in the economy of Central and Eastern European Countries (CEEB) at regional level. We focus in those eight countries from Central and Baltic Europe that became members of the European Union in year 2004 (Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Slovakia, and Slovenia), plus Romania and Bulgaria which joined later in year 2007. The share of this group of countries, on hotel tourism of the European Union, has increased during the period 2000 to 2007 although the intensity of tourism per one thousand people is yet clearly below EU27 average. The econometric model shows the positive impact of tourism on employment in market services.

1. Introduction

In Aguayo, Exposito and Vazquez-Rozas(2009), have compared briefly some touristy indicators of CEEC countries and regions with the EU-15 in 2000. We can say that among the 161 countries and regions of EU-27 only three of the CEEB are between the first fifty in total tourism, in *per capita* terms: Prague (in 17th place), Severoiztochen and Severozápad.

In relation to foreign tourism, the position of CEEB is even better; ten regions are in the top-50: Prague (10th), Severoiztochen, Severozápad, Nyugat-Dunántúl, Yugoiztochen, Közép-Magyarország, Slovenia, Severovýchod, Estonia, and Dél-Dunántúl.

However, these countries do not appear in top-50 of national tourism. This is quite important because, as Williams and Balaz (2000) point out, national tourism has been more affected by the deep economic crisis of the 90s. With the recovery many national tourists started to try to find for affordable nearby destinations instead of the former national ones. Thus, we consider that there is an important source of tourism increase in national tourism, if the appropriated reforms are implemented. This could also help to increase the economic activity in some of the hardest hit areas of CEEB.

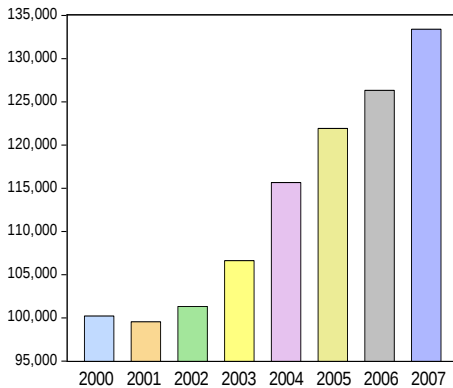
Here we analyze the effects of overnight stages on employment in market services, although the impact of tourism depends not only on overnight stages on hotels but also on extra hotel tourism, particularly in second home tourism in the case of the countries with highest intensity of tourism activities, as in Spain, Switzerland, Italy, France and other ones, as it is analyzed in Guisan and Aguayo(2010).

Graph 1 shows the evolution of overnight stages in the set of 10 CEEB countries of this study for the period 2000-2007, and graph 2 presents the share of those countries on EU27. We notice an important increase during that period, from 100 million overnight stages in year 2000 to almost 135 million in year 2007, and from 5.73% of EU27 in year 2000 to 6.88% in year 2007.

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Table 1 shows the evolution of overnight stages (Ons) of 10 CEEB countries, their shares on total overnight stages of EU27, in percentage, and the intensity of hotel tourism, given by the number of overnight stages per one thousand inhabitants.

Graph 1: Overnight stays (thousand) in CEEB countries, for 2000-2007



Graph 2. Share of CEEB countries on overnight stages of EU27 (%)

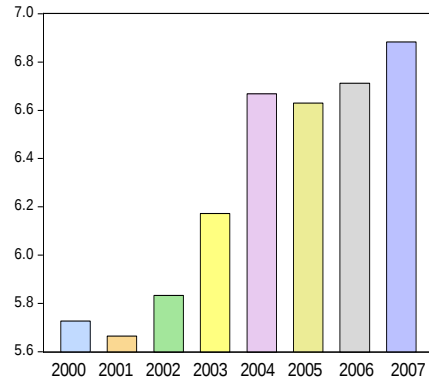


Table 1. Overnight stages (Ons) of CEEB countries, share on EU27 and Ons per one thousand people, years 2000 and 2007

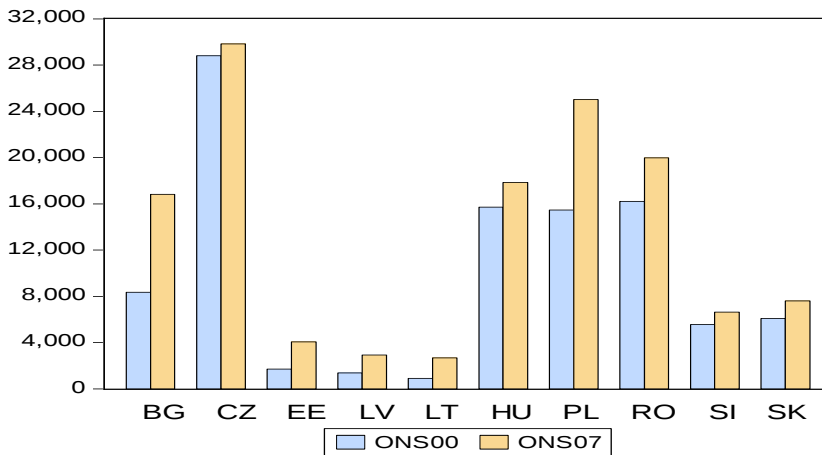
Code	Country	Overnight Stages (Ons) (thousand)		Share of Ons on EU27 (%)		Ons per one thousand people	
		2000	2007	2000	2007	2000	2007
BG	Bulgaria	8349	16813	0.48	0.87	1019	1087
CZ	Czech R.	28806	29825	1.65	1.54	2803	2800
EE	Estonia	1712	4064	0.10	0.21	1248	1275
LV	Latvia	1383	2924	0.08	0.15	581	606
LT	Lithuania	901	2664	0.05	0.14	256	266
HU	Hungary	15714	17847	0.90	0.92	1537	1561
PL	Poland	15461	25003	0.88	1.29	400	406
RO	Romania	16214	19980	0.93	1.03	722	752
SI	Slovenia	5571	6652	0.32	0.34	2803	2771
SK	Slovak R.	6100	7619	0.35	0.39	1130	1131
10 CEEB		100210	133393	5.73	6.88	959	1306
Other EU27		1649790	1804441	94.27	93.12	4361	4590
Total EU27		1750000	1937834	100	100	3625	3913

Source: Aguayo(2011) from Eurostat statistics.

We may notice that Czech Republic and Slovenia show the high intensity of hotel tourism per one thousand inhabitants, among the 10 CEEB countries of table 1, with values around 2800, although below EU27 average that amounts to 3625 in year 2000 and 3913 in year 2007.

Graph 3 shows that the most outstanding CEEB countries by overnight stages, among CEEB countries of table 1, where Czech Republic, Poland, Romania, Hungary and Bulgaria.

Graph 3. Evolution of overnight stages in Bulgaria, Czech R., Estonia, Latvia, Lithuania, Hungary, Poland, Romania, Slovenia and Slovak R. (thousand), 2000 to 2007



2. Econometric Model

Tourism is a very important sector on the economic growth and the employment, as Balaguer and Cantavella (2001) analyse for Spain, Guisan and Aguayo (2001) for German regions and Aguayo et al. (2004) for Mexican regions, although these relationships have not been studied enough. We should take into account that we consider the economic impact, not the major determinants of tourist demand, which is the most common feature in the econometric models.

We estimate an econometric model to test the positive impact of tourism on the employment of the service sector for the 50 CEEB regions in 2000.

We have analyzed the effects on the employment of variables about tourism sector; we have considered also total tourism, national and foreign tourism. Variables are: the number of overnight stays and the number of hotels and similar, but we think that the first one represents better the weight of tourism sector. In addition, we included the service sector GDP.

In the table 2 we present the results selected; with total overnight stays in right side of equation.

The variables in the model are:

LWH that is the employment in Market Services per thousand of people;

NOH that is the number of overnight stays in hotels and similar establishments per inhabitant; and

PWH that is the GDP per inhabitant, in thousands of euros.

Table 2. Selected regression model: the effect of tourism on employment .
50 CEEB regions in 2000

Dependent Variable: LWH. Method: Least Squares. Sample: 1 50				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	53.00190	3.670993	14.43803	0.0000
NOH	8.490376	2.139754	3.967922	0.0002
PWH	24.95217	3.891098	6.412631	0.0000
R-squared	0.694014	Mean dependent var		83.93073
Adjusted R-squared	0.680993	S.D. dependent var		25.03392
S.E. of regression	14.13933	Akaike info criterion		8.193922
Sum squared resid	9396.270	Schwarz criterion		8.308643
Log likelihood	-201.8481	F-statistic		53.30086
Durbin-Watson stat	1.255483	Prob(F-statistic)		0.000000

We have studied the residuals to screen out the presence of heterocedasticity, White Test value is 0.78 (prob=0.94), then we have not reject the homocedasticity. According to this we can choose this estimation.

The results are acceptable. All coefficients are significative at 1% level, in the sense we expected. Additionally, the R-squared value is higher than other similar models with cross section data.

We have to emphasize the positive effect of tourism variable. In addition, it is confirmed the positive impact of Service Sector production on employment. So we have to stress our previous statement about the influence that expansion of tourism may have on both production and employment. Of course, there are important shares of autonomous employment.

Moreover, we estimate two similar equations to employment, considering the number of overnight stays of foreign and national tourism, respectively, per thousand of people. In both equations, the results are similar to the one we presented, but we find that the coefficients of national tourism and Service GDP are higher than foreign tourism. We present these equations in the table 3. All coefficients are significatives at 1% level, also we have not rejected the homocedasticity of residuals.

Table 3. The effect of national and foreign tourism on employment in Service Sector. 50 CEEB regions in 2000

National tourism	$LWH = 46.46 + 16.74 * NONH + 33.22 * PWH$
Foreign Tourism	$LWH = 57.78 + 10.19 * NOFH + 22.98 * PWH$

The variables in these models are:

LWH is the employment in Market Services per thousand of people;

NONH is the number of overnight stays of national origin in hotels and similar establishments per inhabitant;

NOFH is the number of overnight stays of foreign origin in hotels and similar establishments per inhabitant;

PWH is the GDP per inhabitant in thousand Euros.

Tourism also has a positive effect on PWH, accordingly to the estimations of Guisan, Aguayo and Carballas (2004b) in a cross section model of 151 European regions and other studies.

5. Main conclusions.

In first place, we can confirm the increase of regional disparities in unemployment rates. Over the last years, the mean of unemployment have grown from 1.57% in 1990 to 11.9% in 2002. In addition, in 2000, there are rates of unemployment from 3.9% in Prague, to 28.5% in Severozapaden.

Secondly, regional disparities are also shown in tourism. The changes in national and international demand had done that the regions more attractive for international tourism won, but economic crisis had a negative consequence in national tourism.

Prague is the region that receives greater number of tourists, surpassing 7 million in 2000; more than 90% is foreign tourism. There are five regions in the foreign and national tourism top ten: two regions in the north of Czech Republic (Severozápad and Severovýchod), two Hungary regions (Nyugat-Dunántúl and Dél-Dunántúl) and Slovenia. None of the Polish regions ranks among the top five, so it seems that a push on tourism should be attempted to increase the activity of this sector in Poland.

Thirdly, we have seen that no region or country of the CEEB is in the top-50 in national tourism, among the 161 countries and regions of EU-27. Thus we consider that there is an important source of tourism increase in national tourism. This could also help to increase the economic activity in some of the hardest hit areas of CEEB.

Finally, our interregional econometric model shows the positive impact of tourism on the Service Sector employment. Tourism could be used to foster both the employment growth and the regional economies through the sectors linkages within the region.

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¹<http://www.usc.es/economet/eaat.htm>

²<http://www.econ.kuleuven.ac.be/licos/joep/konings.htm>

Annex

Table 4.Regional unemployment in selected transition economies

		Average	Minimum	Maximum
Bulgaria	1991	7.4	4.9	11.6
	2001	19.9	4.2	43
Czech R.	1991	4.3	1.2	6.2
	2001	8	3	14.6
Hungary	1991	4.1	1.2	10.7
	2001	8.5	2.6	19
Poland	1991	12.3	8.9	20.7
	2001	18.4	12.8	24.1
Romania	1991	3	1.2	6.2
	2001	8.8	3.1	15.3

Source: Bornhost and Commander (2004, p13).

Table 5. Tourism ranking of 50 regions/countries (2000).

Region	Total	Foreign	National
BULGARY			
Severozapaden	50	50	48
Severen Tsentralen	38	41	33
Severoiztochen	2	2	18
Yugozapaden	28	21	35
Yuzhen Tsentralen	30	36	23
Yugoiztochen	7	5	26
CZECH REPUBLIC			
Praha	1	1	16
Strední Cechy	14	12	15
Jihozápad	11	11	7
Severozápad	3	3	4
Severovýchod	5	8	2
Jihovýchod	18	16	20
Strední Morava	12	15	5
Moravskoslezsko	15	19	8
HUNGARY			
Közép-Magyarország	8	6	29
Közép-Dunántúl	17	13	19
Nyugat-Dunántúl	4	4	3
Dél-Dunántúl	9	10	10
Észak-Magyarország	22	30	14
Észak-Alföld	21	18	21
Dél-Alföld	31	32	28
ESTONIA	13	9	27
LITHUANIA	41	28	50
LATVIA	27	17	34
SLOVENIA	6	7	6
SLOVAK REPUBLIC	16	14	17
POLAND			
Dolnoslaskie	29	26	30

Kujawsko-Pomorskie	42	38	40
Lubelskie	48	47	47
Lubuskie	37	33	36
Łódzkie	44	44	43
Małopolskie	24	22	22
Mazowieckie	34	24	38
Opolskie	49	43	49
Podkarpackie	47	48	46
Podlaskie	45	39	44
Pomorskie	32	27	31
Śląskie	46	45	45
Świętokrzyskie	43	46	42
Warmińsko-Mazurskie	26	20	25
Wielkopolskie	40	35	39
Zachodniopomorskie	35	25	37
ROMANIA			
Nord-Est	39	42	32
Sud-Est	10	29	1
Sud	33	40	24
Sud-Vest	25	49	12
Vest	20	34	9
Nord-Vest	23	37	13
Centru	19	31	11
Bucuresti	36	23	41

Source: Authors' elaboration from REGIO database, EUROSTAT.