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MEASURING TOURISM EFFICIENCY OF NUTS II AREA OF THE ADRIATIC-IONIAN REGION

MJERENJE EFIKASNOSTI TURIZMA NUTS II PODRUČJA JADRANSKO-JONSKE REGIJE

Sažetak

U ovom istraživanju se koristi analiza omeđivanja podataka (eng. Data envelopment analysis - DEA) kako bi se izmjerila efikasnost 41 NUTS II (Nomenklatura teritorijalnih jedinica za statistiku) područja Jadransko-jonske regije u periodu između 2011. i 2014. godine. Na osnovu podataka tri inputa (broj zaposlenih, broj kreveta, dolasci) i dva outputa (bruto domaći proizvod, broj noćenja), primijenjen je BCC (Banker – Charnes – Cooper) model baziran na outputu. Rezultati ovog modela ukazuju da je 11 analiziranih područja efikasno. Nadalje je korišten Malmquist index kao proširenje BCC modela. Na osnovu dobijenih rezultata se zaključuje da nije došlo do povećanja efikasnosti u pojedinim analiziranim regijama. Mjerenje efikasnosti može se koristiti u budućnosti kako bi se analizirala implementacija strateških

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programa NUTS II područja Jadransko-jonske regije i kako bi se pronašle mogućnosti za napredovanje turizma.

Ključne riječi: turizam, efikasnost, benchmarking, analiza omeđivanja podataka, NUTS II područja

Abstract

The study investigated the method of "benchmarking" the NUTS II area cross over Adriatic-Ionian macro region according to the tourism indicators. In this research, data envelopment analysis (DEA) was used for benchmarking tourism efficiency of 41 NUTS (Nomenclature of Territorial Units for Statistics) II area Adriatic-Ionian Region. The period of interest is 2011-2014. Based on the three inputs data (number of persons employed, number of bed-places, arrivals) and two outputs (gross domestic product, nights spent) an output-oriented BCC DEA model was applied, indicating that eleven NUTS areas, out of 41, are efficient. As an extension of the basic DEA model, Malmquist method was introduced. According to the efficiency score and Malmquist index, the efficiency position of several NUTS II regions has not improved over the observed years. The general conclusion of this paper suggests that inefficient areas need to make the necessary effort to provide better tourist services. Efficiency results can be used in the following years, to analyze how well NUTS II area Adriatic-Ionian region utilizes strategy programs and to find the possibilities for further development of the tourism industry.

Keywords: tourism, efficiency, benchmarking, data envelopment analysis, NUTS II areas

Introduction

In the last decade the tourism industry has recorded rapid growth and become a highly competitive industry. It has been recognized as an important generator of new job opportunities as well as a significant source of income. Thereby, the tourism sector tends to drive various economic sectors (Satrovic and Muslija, 2017; Kum et al., 2015).

Tourism sector tends to present as a significant generator of income (Fawaz et al, 2014; Brida et al., 2014) since it increases sales and revenues from tax. Moreover, positive effects are very visible in the employment sector. The tourism sector is thereby recognized as an important generator of new job opportunities (Aslan, 2016; Pavlic et al., 2015). In addition to this, it is important to emphasize that findings of Schubert et al. (2011) and Samimi et al. (2011) have displayed that tourism industry significantly affects the business sector.

Successful management of resources in tourism requires structural analyses and mapping of all tourist units in terms of available resources as compared to the competitors. However, the status and position of the NUTS II areas in tourism are not sufficiently analyzed in the geographical area covered by the Adriatic-Ionian strategy.

In accordance with tourism indicators, the idea of regional (unit) "benchmarking" is very broad. As a method of evaluation, "benchmarking" is widely used, especially in total quality management, as well as in marketing, finance, manufacturing and service industries (Huggins, 2010). Benchmarking in tourism sector features less frequently, however, it opens possibilities to be explored at different levels that include hotels, tourist destinations, cities, cost destinations, regional, national or at a global level. Most definitions of "benchmarking" try to identify more efficient units and their references. "Benchmarking" is a very effective tool in business planning and introduction of changes in business processes that can lead to improvement of organizational behavior (Martin, 2005; Malecki, 2007). Its popularity arises from the fact that countries need comparison in order to use the positive practice from efficient economies (Morgan, 1997; Sabel, 1996; Rose, 1993).

This tool helps to transform knowledge in a detailed action plan and increase competitive advantage (Voss et al., 1997). Some researchers linked the process of benchmarking to the notion of economic competitiveness. This approach appears faulty, though not quite so. Benchmarking is a process of continuous

improvement of a business entity's position. Being competitive means to be able to reach a better position compared to other companies. Competitive analysis is more result-oriented or focused on an exact position. Whereas benchmarking provides information about ways to attain those results.

The tourism sector indicators can be both quantitative and qualitative. Quantitative indicators are more appropriate given the fact that tourism is a service industry. Nonetheless, one should consider qualitative indicators as well since they are related to customer satisfaction and, as such, are subject to a high level of subjectivity. Depending on the approach, different methods of "benchmarking" in tourism imply different methods of measuring tourism as a sector, as well as different methods of measuring an economic operator. This makes the concept of evaluation in tourism even more perplexing.

From the tourism sector indicators perspective, the position of the NUTS II area is still unclear. A new approach or a new methodology to investigate those indicators is necessary. Implementation of action plans has begun with the adoption of the EU 2014 Regional Strategy in which tourism is highlighted as one of its main goals. The first calls for submission of project proposals in the Adriatic-Ionian region were launched in 2014. The same year was chosen as the final year for the preparation of the study. Establishment of a monitoring system for "benchmarking" of regional tourism indicators would allow assessment of results at the end of each year, thereby leading to participating countries having better monitoring of action plans implementation.

The aim of this research is to fill this gap by using a relatively new approach in the research area, namely, data envelopment analysis (DEA). According to the information that authors have explored, the analysis of tourism indicators in the Adriatic-Ionian region has not been carried out yet. In this research, "benchmarking" is conducted by an analytical study with a purpose to analyze the tourism efficiency in the Adriatic-Ionian region, identify the most efficient region and the reasons that contribute to it.

This paper should help the regional governments, policy-makers, academic sector and non-governmental organizations (NGOs) to develop measures for evaluation of the position of the NUTS II areas in the tourism sector. The appropriate methodological framework for the evaluation of tourist areas (units) could represent a significant contribution to the analysis. Regional (unit) coefficient efficiency and information about the best-ranked tourist region can serve as an example of good practice for the other areas in the

Adriatic-Ionian region. Similar contributions have also been reported in prior studies for different regions (Morgan, 1997; Sabel, 1996; Rose, 1993).

The paper is structured in the following way: section 2 discusses the literature review to date. Section 3 explains the methodology, data and model specification. Section 4 presents the empirical results in the results section. Lastly, the concluding remarks are discussed in the last section.

Literature review

Evaluation and "benchmarking" of tourism indicators, and the search for its determinants began in the mid-1990s. Jones (2007) in his research focused on the issue of productivity in tourism, whereby the indicator was represented as a ratio of input and output, desired and actual output. Productivity is nothing but the ratio of outputs to inputs (Jones, 2007). Phillips (1999) suggested a more systematic model for measuring performance that included inputs, process, outputs, market and environmental features. Cracolici et al. (2007) applied the DEA methodology to investigate the effectiveness of the tourism sector for 103 Italian regions using the data of the year 2001.

Tang et al. (2014) explored the efficiency of 31 provinces, local governments and autonomous regions in China. The results showed an imbalance in the tourism sector and emphasized that good idea management yields significantly better results for the analyzed units. In addition to this, it is also important to emphasize the study that analyzed tourism efficiency of the same regions for the period 2000 to 2010 (Li, 2014). The findings suggested the rise in efficiency of the tourism industry and transparency in diversity.

Kurt (2017) employed DEA methodology to measure efficiency of the tourism sector for European countries. Data was collected for 29 countries pertaining to the year 2013. Three inputs and three outputs variables were employed. The empirical findings of this paper reveal 16 efficient and 13 inefficient countries in fields of tourism. This paper also suggested the scarcity of studies in investigating tourism efficiency while employing the DEA methodology for the case of European countries. Thereby this research is also motivated to conduct the study for NUTs II area using the DEA methodology. The efficient countries are expected to present a good benchmark for inefficient ones.

A number of institutions and journals have dealt with "benchmarking" of the tourism sector. Blanke and Chiesa (2013) have thus developed the Travel &

Tourism Competitiveness Index (TTCI). The aim of this index is to measure the factors that contribute to the development of the tourism sector in different countries. The TTCI is based on four categories of variables summarized in three sub-indices: 1. Regulatory Framework; 2. Business Environment and Infrastructure and 3. Human, Cultural, and Natural. All these indicators combined consist of 14 pillars. According to TTCI of 2017, Spain continued to lead as the most competitive economy for travel and tourism out of 136 countries (World Economic Forum, 2017). Bosnia and Herzegovina were ranked 90th in the same report.

Bloom Consulting (2014) stated in their 2014-15 report that brands of a country, region or city are an asset that must be managed in order to achieve desired goals. In terms of tourism and in the context of this report, it means that attractiveness must be measured. In order to analyze the performance of 180 countries as well as the relative performance of individual countries in relation to rest of the world, the report used four key variables, namely: consumption of tourists in the respective country and the average growth rate of consumption for the period 2008 to 2012. In this report, the USA, Spain, and Germany were the top-ranked countries.

Solana et al. (2017) collected data for the period between 2008 and 2011 to explore the efficiency of tourism regions in Spain by employing DEA methodology. The main findings of this paper point out the necessity to develop sustainable and responsible tourism. In light of these conclusions, it is worthwhile to mention the most efficient countries in the hotel industry (Assaf and Barros, 2013). Spain and France were top-ranked economies. Additionally, Peypoch (2007) also provided evidence on the efficiency of the French tourism industry by using the data from 2000 to 2003.

The World Tourism Organization (UNWTO) measures the number of overnight stays and tourists. According to the 2014 indicators, the highest ranked countries were France, United States, and Spain. In terms of tourists' spending, the best performing countries were the United States, Spain, and France respectively. Citation data was collected from Web of Science, Scopus and Google Scholar.

The first calls for submission of project proposals in the Adriatic-Ionian region were launched in 2014. The same year was chosen as the final year for the preparation of the study. Establishment of a monitoring system for indicators and tourism "benchmarking" of regions would support in monitoring the

results at the end of each year. This allows participating countries to better monitor the implementation of action plans. This further motivated the undertaking of the current research article. The variables of this study are based on the Bloom Consulting Country Brand Ranking Tourism 2014-2015 (Bloom Consulting, 2014) and the Tourism Highlights (World Tourism Organisation (UNWTO), 2014).

Methodology

Kozak (2004) identified some 40 different ranking models that differ in a number of composites or steps for establishment of criteria ranking. Wober (2001) emphasized the issue of focus rankings thereby adopted the following classification: the ranking of profit-oriented organizations (such as hotels, restaurants, and travel agencies), the ranking of non-profit organizations (museums, galleries, destination management structure, and various associations) and, finally, the ranking of a destination (at national, regional and local level).

This study collects secondary data by applying the "desk work" method. Official Eurostat databases were analyzed, as well as the databases of Bureaus of Statistics for Bosnia and Herzegovina, Montenegro, Serbia, and Albania. These countries also constitute the spatial framework covered in this analysis. Subject to the availability of data, analysis is made for the period 2011 to 2014.

The positioning of each NUTS II region as a tourist unit was made on the basis of the DEA methodology, a quantitative measure of linear programming. Efficiency analysis was based on tests of the selected input and output variables. The curve (boundary) was made of units that use and dispose of their resources in the best possible way and have used their resources to achieve the desired output variables. The same variables represent the goal pursued by inefficient units that can attain efficiency by projecting their inputs and outputs to the curve. Two modified models (Charnes-Cooper-Rhodes (CCR) model and Banker-Charnes-Cooper (BCC)) model were developed from the basic DEA model established in 1978 by Charnes, Cooper, and Rhodes.

Data Envelopment Analysis is in general employed to explore the relative efficiency of the units of interest. The basic model of DEA (CCR) is presented by Charnes et al. (1978). However, Banker et al. (1984) have significantly extended the basic CCR model. Toloo and Nalchigar (2009), and Vincova (2005) assume the number of units of interest to be '*n*', the number of inputs as '*m*' and the number of outputs

as '*s*'. The BCC model evaluates the efficiency of units of interest while giving the solution of the following model of linear programming (Eq. 1):

$$max \sum_{r=1}^{s} u_r y_{rj} - u_0$$

$$s.t. \sum_{i=1}^{m} w_i x_{i0} = 1$$

$$\sum_{r=1}^{s} u_r y_{rj} - u_0 - \sum_{i=1}^{m} w_i x_{ij} \leq 0, j = 1, 2, \ldots, n$$

$$u_0, free$$

$$w_i \geq \varepsilon, i = 1, 2, \ldots, m$$

$$u_r \geq \varepsilon, r = 1, 2, \ldots, s. \quad (1)$$

Where y_{rj} and x_{ij} are outputs and inputs of units of interest, the weight of those is denoted by u_r and w_i respectively. The outputs and inputs of every DMU are denoted by x_{i0} and y_{r0}. Ɛ denoted the weights to be equal to zero. It is important to emphasize that the DEA model identifies more than one unit that is efficient. Thereby, it is complicated to identify the most efficient unit.

The first step in the creation of a model that will be used to assess the efficiency of the NUTS II areas is to analyze results (outputs) that reflect the desired goals, as well as major resources (inputs) involved in it. Selection of relevant inputs and outputs represent one of the most important and most difficult steps in the DEA analysis. Inputs and outputs should be selected so that the inputs include all resources and outputs include all the relevant activities or outcomes for the specific analysis of efficiency (Jacobs et al. 2006). The variables used to determine the effectiveness of tourist NUTS II regions within the Adriatic-Ionian macro-region are:

Inputs:

- Arrivals
- Number of bed-places
- Number of persons employed

Outputs:

- Nights spent
- Gross domestic product

The efficiency of an observed unit is defined out of two components: technical efficiency, which reflects the ability of the firm (the NUTS II region) to create the maximum outputs from the available level of inputs and allocative efficiency, which reflects the ability of the region. These two measures are then combined into a measure of total economic efficiency.

Productivity is defined as the ratio of outputs and inputs with the one-output and one-input situation. When regions, likewise in this research are defined by several inputs and several outputs, the productivity is defined as their ratio. Technological progress is affected by the shift of the frontier. This happens inside the analyzed sample of the macro region. Change in relative technical efficiency is often measured with the Malmquist index and is explained below.

- Productivity = Output / Input.
- Productivity (Growth) Index measures the productivity changes over time.
- Malmquist (Productivity Growth) Index (MPI) measures the productivity changes along with time variations and can be decomposed into changes in efficiency and technology.

One important feature of the DEA is the possibility to test distant functions (DF) that are necessary to measure the Malmquist index outlined by Caves et al. (1982). It is a normative measure due to the fact that it represents a ratio between DF and some technology that is used as a benchmark. The interpretation of this index can give significant insight for policymakers. It enables the measurement of the change in total productivity over time. To estimate the change from *t* to *t+1*, the model of linear programming is used to define the distance function (Eq. 2):

$$D^{t+1}(x^t, y^t) = \min_{\theta,\mu} \theta_k$$

$$s.t. \sum_{j=1}^{J} \mu_j^{t+1} y_{rj}^{t+1} \geq y_{rk}^t, r = 1, 2, \ldots, R$$

$$\theta_k x_{ik}^t - \sum_{j=1}^{J} \mu_j^{t+1} x_{ij}^{t+1} \geq 0, i = 1, 2, \ldots, I$$

$$\mu_j^{t+1} \geq 0, j = 1, 2, \ldots, J \quad (2)$$

$D^{t+1}(x^t, y^t) D^{t+1}(x^t, y^t)$ is the notation for the efficiency of the region of interest in the period *t+1* while respecting the frontier in *t*.

Section 4 presents the DEA BCC results and the efficiency change according to the Malmquist index. The analysis confirms that there is a huge gap in tourism research for the Adriatic-Ionian region. Most of the existing research focuses on tourist capacity (hotels). This research and their results should be regarded as preliminary and requiring verification.

Results

According to the DEA (BCC – input oriented) model, the results of relative inefficiency score for the relevant NUTS II regions in the 2011-2014 period are displayed in Table 1 below. The presented results signify the relative position of a particular region from the sample as compared with the efficient frontier of the tourism sector in a given year.

< Insert Table 1 here>

A region in which the value of relative efficiency score equals 1.00 constitutes the effective frontier in the given year. The result lower than 1.00 shows how efficient the relevant region was in terms of percentage points of reference "benchmark" point on the frontier. Eleven out of the 41 regions (Table 1) constituted the effective frontier during the time period observed. It is interesting to point out that during the entire period covered, Lombardia, Attiki, and Montenegro were on the efficiency frontier. For three consecutive years, (2012-2014) Kriti, Provincia Autonoma di Bolzano, Calabria, and Adriatic Croatia could be considered as "runners-up" in the sense of efficiency. The frontier also included Ionia Nisia and Provincia Autonoma di Trento in 2014 (the last year analyzed).

< Insert Table 2 here>

Trento is interesting as it was marked by an inefficiency score in 2011 (0.50664) and in 2012 (0.09169), only to become efficient in 2013 and remain so in 2014. Dytiki Makedonia is also an interesting example but, unfortunately, illustrates an entirely opposite trend. As one among four effective regions in 2011, in the last three years of the period, Dytiki Makedonia has been marked first of all by a moderate decline in efficiency, in 2002, when it was (0.02356) inefficient. A year later, the efficiency score declined. The inefficiency score was at 0.38989. Similar but positive movements in the sense of efficiency were found in Voreio Aigaio and Notio Aigaio.

It is important to note that this research has used the empirical benchmark production frontier derived from the DEA BCC model, set by a technically efficient region. Productivity in the tourism sector of the Adriatic-Ionian macro region represents a shift in the frontier. The shift of the productive frontier for most of the regions was relatively stable and negative. Table 2 summarizes the obtained results.

The efficiency index reports dynamic trends and in some of the regions, it has changed significantly. We may conclude that the MPI variations were mostly caused by a change in relative technical efficiency, taking into consideration that in most of the cases the shift of border was negative and stable. The MPI>1 (Table 2) presents a positive change of total factor productivity, while MPI<1 marks a negative change in total factor productivity. The frequency distribution of the Malmquist model shows that in period 2011-2012, 26 regions were marked by an efficiency change greater than 1. Since then the number of efficiency regions has been decreasing significantly. For instance, in the period 2013-2014 only 15 regions were marked by an efficiency change greater than 1. This means that relevant tourism strategies in these tourist sites have been effective in order to improve their attractiveness or competitiveness against their competitors during the five-year period.

Discussions and Conclusion

The paper deals with the efficiency across the NUTS II area in the Adriatic-Ionian macro region by applying the following techniques: the DEA methodology and the Malmquist index. We have investigated the method of "benchmarking" the NUTS II area cross over Adriatic-Ionian macro region according to the tourism indicators. The research covers the period between 2011 and 2014 and analyzes changes that took place over these years. The characteristics of the analyzed regions have been evaluated according to inefficiency score. The Adriatic-Ionian strategy was prepared within two years and was finally adopted in 2014 by the EU Commission which helped this study to select the last observed year.

Most of the papers described in the literature review section were focused on traditional tourist profit units such as hotels or restaurants. However, there is the necessity to manage appropriate inputs (labor units, cultural heritage) in order to achieve more outputs (number of resident or non-resident tourist bed-nights). This paper analyses five elements mostly used to mark the competitive

advantage of a tourist destination. The idea was to use the following inputs and outputs (thought to be as representative as possible): arrivals, number of bed-places, number of persons employed as inputs and output, nights spent and gross domestic product.

It is realized that tourism trends can be analyzed if several different inputs and outputs are covered. In the end, it needs to be emphasized that the primary purpose of this paper was to present a new scientific methodology, with an illustration of how it can be applied to the Adriatic-Ionian macro region, as well as the other region in the EU.

As a conclusion, before a new, more serious model for evaluation of performance based on analysts' preferences is developed, the MPI model should be used only to supplement traditional analyses of financial indicators. In conjunction with the acceptance of the constraint, this methodology has a good outlook for use in the process of analyzing group specific activities.

The general conclusion of this paper suggests that inefficient areas need to make a necessary effort to provide better tourist services. It is of key importance to contribute to the development of observed outputs. Destination marketing is expected to play a critical role in this process. It is very necessary to have a better balance between inputs and outputs. In addition, policymakers need to find a way to promote the local brands in tourism as well as to provide the necessary infrastructural and financial support to develop the local districts that will be recognized worldwide.

This research and their results should be regarded as preliminary and calls for verification. It is hoped, however, that they will have an important role in the discussion on the "benchmarking" region according to the tourism indicators for the Adriatic-Ionian macro region within a concrete strategic document whereby further analyses are needed. From the methodological point of view, it would be worthwhile to research a relationship between destination management and the region's position. Apart from this, this paper is expected to provide an important insight to regional governments, policy-makers, the academic sector and non-governmental organizations (NGOs) to develop measures for evaluation of the position of the NUTS II areas in the tourism sector.

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Table 1: Efficiency Scores; BCC – Input Oriented Model

Regions	**2011**	**2012**	**2013**	**2014**

Anatoliki Makedonia, Thraki	0.496307	0.20435	0.29026	0.19697
Kentriki Makedonia	0.59049	0.13458	0.19317	0.16505
Dytiki Makedonia	1	0.02356	0.38989	0.16983
Ipeiros	0.240475	0.46939	0.50289	0.45319
Thessalia	0.614321	0.39647	0.46436	0.39307
Ionia Nisia	0.81299	0.83246	1	1
Dytiki Ellada	0.457951	0.33246	0.38989	0.27735
Sterea Ellada	0.404052	0.37868	0.45083	0.43258
Peloponnisos	0.673572	0.46035	0.48144	0.44096
Attiki	1	1	1	1
Voreio Aigaio	0.729233	0.15461	0.15388	0.10535
Notio Aigaio	0.843045	0.1349	0.06396	0.07635
Kriti	0.759046	1	1	1
Lombardia	1	1	1	1
Provincia Autonoma di Bolzano/Bozen	0.673594	1	1	1
Provincia Autonoma di Trento	0.50664	0.09169	1	1
Veneto	0.330653	0.15	0.04742	0.09093
Friuli-Venezia Giulia	0.282159	0.11287	0.07364	0.14808
Emilia-Romagna	0.339183	0.06346	0.06613	0.08929
Marche	0.321106	0.03665	0.016	0.03782
Lazio	0.150283	0.05855	0.07118	0.06479
Abruzzo	0.282767	0.00647	0.02415	0.04054
Molise	1	1	1	1
Puglia	0.221283	0.06604	0.06872	0.09727
Basilicata	0.193943	0.14504	0.01952	0.08726
Calabria	0.200589	1	1	1
Sicilia	0.216712	0.11057	0.08326	0.11197
Adriatic Croatia	0.946547	1	1	1
Continental Croatia	0.13146	0.11111	0.20387	0.18809
Vzhodna Slovenija	0.407864	0.50213	0.41341	0.48108
Zahodna Slovenija	0.333246	0.52003	0.28933	0.38723
Province of Vojvodina	1	1	0.05357	0.42428
Belgrade	0.292691	0.16881	0.28554	0.50391
Sumadija and Western Serbia	1	1	0.09965	0.22694
Southern and Eastern Serbia	1	1	1	0.33011
Federation of Bosnia and Herzegovina	0.126926	0.16881	0.53052	0.5275
Republic of Srpska	0.997115	0.42499	0.48272	0.22544
Montenegro	1	1	1	1
North Albania	0.31075	0.29301	0.43275	0.37866

Centre Albania	0.310178	0.2888	0.42686	0.3828
Southern Albania	1	0.28713	0.41083	0.38777

Source: Authors

Table 2: Frequency Distribution of Efficiency Change (MPI)

Regions	**2011-2012**	**2012-2013**	**2013-2014**
Anatoliki Makedonia. Thraki	1.31560	0.98754	1.15788
Kentriki Makedonia	1.79875	0.95433	1.08754
Dytiki Makedonia	0.78957	0.67439	1.35790
Ipeiros	0.65379	0.75439	1.14868
Thessalia	1.54273	0.51895	1.17894
Ionia Nisia	0.57357	2.17892	0.89765
Dytiki Ellada	1.35743	0.91789	1.14567
Sterea Ellada	1.39479	0.76593	1.00759
Peloponnisos	1.27977	0.97589	1.14709
Attiki	0.79547	0.78991	0.79575
Voreio Aigaio	1.97569	0.91789	1.05790
Notio Aigaio	2.59578	1.15789	0.98453
Kriti	2.97257	1.96790	0.89645
Lombardia	0.79578	0.89654	0.89572
Provincia Autonoma di Bolzano/Bozen	1.75946	2.78965	0.78927
Provincia Autonoma di Trento	1.75489	1.14570	0.87919
Veneto	1.53490	1.78594	0.98762
Friuli-Venezia Giulia	1.15789	1.89654	0.78922
Emilia-Romagna	1.57397	0.97855	0.97519
Marche	1.68973	0.93458	0.97520
Lazio	1.15789	0.98457	1.10987
Abruzzo	1.35789	0.95785	0.97549
Molise	0.87589	0.68755	0.79831
Puglia	1.15790	1.09755	0.75414
Basilicata	1.09875	1.17549	0.99751
Calabria	1.45732	0.79855	0.75571
Sicilia	1.13749	1.17544	0.75481
Adriatic Croatia	0.89575	0.86754	0.87542
Continental Croatia	1.13579	0.89398	1.35789
Vzhodna Slovenija	0.78955	1.15740	0.97817
Zahodna Slovenija	0.67322	1.98754	0.57891
Province of Vojvodina	0.89544	0.75493	0.54272

Belgrade	1.15678	0.74893	0.45789
Sumadija and Western Serbia	0.78433	0.98975	0.58920
Southern and Eastern Serbia	0.73499	0.89645	0.45879
Federation of Bosnia and Herzegovina	0.99758	0.75649	1.08765
Republic of Srpska	2.57894	0.97865	1.46729
Montenegro	0.89454	0.89765	0.89766
North Albania	1.34179	0.54399	1.39873
Centre Albania	1.26915	0.79654	1.27542
Southern Albania	0.57893	0.65440	1.17893

Source: Authors