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THE ECONOMIC CONTRIBUTION OF TOURISM TO THE SLOVAK ECONOMY

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This study focuses on quantification of economic impacts of tourism by measuring tourism expenditure at the national level via input-output tables which are transmitted to The European System of National and Regional Accounts (ESA 2010) and current Tourism Satellite Account (TSA) based on 2013-14 financial year data. The key findings are as follows: In the year 2013 it accounted for the sum of EUR 4.624.912 thousand. A basic parameter for its calculation is a multiplier of value added with induced effect in the amount of 1.1938. It was the production of selected foods and tobacco, production of accommodation services and catering services that contributed to the total economic value of tourism in the highest volume. Practical utilisations of results consist in creating a database performing more effective decision making process.

Keywords: *Economic benefits, input-output analysis, multipliers effects, value added*

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INTRODUCTION

Tourism´s role and importance in economies is becoming increasingly evident. For Slovak economy, tourism represents a promising resource for development and economic growth. Tourism contributes significantly to the Slovak economy as it impacts a wide range of business sectors and augments employment and payroll income. Because of this reason, there is an acute need to *quantify* benefits of tourism so that the state will take part to correct the market failures.

Since tourism is becoming a key driving force of socio-economic development (UNWTO, 2014), it is essential to pay attention to measuring not only its direct but also secondary benefits in individual countries in order to evaluate tools of economic and regional policy. In this respect, academic activities have been going on for several decades, while various approaches and models depicted indirect and induced effects of tourism in a region. One of the most frequently applied models is the input−output (I−O) model and the calculation of input-output multipliers. An intangible nature of a substantial part of tourism product increases the importance of determining the parameters that enable to measure effects of their consumption. This idea is supported also by Mundt (2006), who considers the use of the multiplier in tourism to be more important than in other industries, in particular in view of the fact that a large part of tourists' expenditures is invisible.

There are several approaches to applying the I-O model in tourism. It deals with the structure of the model itself, the way of its application in analyses of tourism economic impacts as well as basic methodology connection. These approaches were elaborated in detail in works by authors Fletcher and Archer (1989, 1990). Stettler (2000) sees the application of the I−-O analysis mainly in solving macroeconomic issues; i.e. mainly in measuring quantitative (monetary) macroeconomic effects. The reasons are existing data material and relatively clear results. A marked shift in this area is

the implementation of tourism satellite account (TSA) into SIOT tables. This implementation brings possibilities of quantifying economic effects of tourism production generated by internal consumption (Van de Steeg, 2008). It is a model that is used by most authors of studies on measuring economic effects of tourism on the territory of recent past as well as the present (Khan et al, 1990, Adams, 1992, Chang, 2001, Mules, 2005, Boďa, 2006, Chang, 2010, Bakos, 2011, Stynes, 2002, Van de Steeg, 2008 and many other). The most prevalent approach to estimating the direct and secondary effects of visitor spending is input-output model (I-O model) and this model is still popular today (Reece, 2010).

Input-output analysis was used also in several analytical studies that served as background in the creation of up-to-date development documents, e.g. in identifying key industries of the Slovak economy (Balog, 2013), as well as in the evaluation of the economic importance of creative industry in the Slovak Republic (Neulogy, 2013). In the Czech Republic, there was worked out a certified methodology of calculating economic impacts of cultural organisations (Raabová, 2013). The I−O model was used for the purposes of quantifying economic effects of tourism on local and regional levels by several authors. Frechtling and Horváth (1999) explored the multiplier effects of visitor expenditures in Washington D.C. Likewise, the analysis into economic effects in the Austrian region Kalkalpen (Baaske, 1998) is based on the I−O analysis. The I−O Kalkalpen analysis has been applied as the most suitable of methods of measuring economic effects also in the study on measuring economic effects of the support of the Alpine infrastructure in Austria (Grohall, 2010). In several cases, the use of I−O analysis is known for exploring the economic impacts of events. This is e.g. the case of the analysis of impacts of potential expenditures related to the Olympic Games in the Wallis Canton (Switzerland) and identifying the share that flows from to other regions (Stritt, 1997). Next, it is also possible to mention the

analysis of impacts of organising Olympic Games in Graz in the year 2002 (Stettler, 2000), as well as, for instance, the analyses of the impact of expenditures during the match on the local tourism (Neuhaus, 1997).

Therefore, the application of I−O analysis in the quantification of economic effects of tourism has a relevant theoretical and also practical background, which reflects several levels of usage – national, regional and local levels as well as the level of the event. Under conditions of the Slovak economy, the use of I−O analysis for the quantification of economic effects of tourism industry is known only in the works of the author cited before − Boďa (2006) – who, however, does not mention partial (product) multipliers of tourism, and so, we are not able to evaluate the multiplying efficiency of its individual products. Input-Output model is also used and applied to tourism in the present paper. Its aim is to quantify economic benefits of tourism on national level by means of total value added created and/or stimulated by the production of tourism enterprises. The paper intends to verify the possibility of application of the Leontief input-output model for the determination of economic value of tourism in the environment of tourism in the Slovak Republic (SR).

LITERATURE REVIEW

Over the last decades, tourism has become a major activity in our society and an increasingly important sector in terms of economic development (Giaoutzi and Nijkamp, 2006; Nonthapot and Ueasin, 2015). As pointed out by Fletcher (1989), tourism economic impact is complex because it occurs across several industrial sectors. There are three fundamentally different approaches for studying the economic impacts of tourism on economies: direct economic impacts, qualitative/perceived economic impacts, and multiplier effects.

Since tourism is a conglomeration of industries, it is not possible to identify a set of industries, add up their output/employment and use the result to gauge the impact of tourism in a country or region. TSA offers a solution to this problem. The term 'satellite' refers to the fact that a TSA is based on the I/O framework of a state/regional economy (Bonn, Harrington, 2008). The TSA is considered to be an optimum method of reporting the direct effect of tourism expressed in overall internal demand for tourism, direct economic contribution of tourism, direct internal expenditures in tourism, direct internal tourism consumption (Frechtling, 2013). However, there are methods that more adequately study the measuring of the contribution of tourism to an economy's growth by means of Gross value added (GVA) per capita, resp. Gross domestic product (GDP) per capita (Ivanov, 2007). These enable to monitor the influence of tourism on the economy in connection with the operation of various exogenous influences. An integrated nature of the quantification of tourism value added lies in the expression of not only direct but also indirect and induced effects. Indirect benefits of tourism capture the intermediate consumption for the production of goods and services in the sector of tourism (Vellas, 2011). Consequently, the original expenditure spent in the sector of tourism thus passes through several stages and sectors of the economy (Bod'a, 2006). Induced benefits express "part of expenditures of participants of tourism, which travels to residents in the form of income (wages, salaries, and profits), while part of them leaves this cycle in the form of savings and part is again consumed" (Bakos, 2011, p. 23). "Induced effects cover consumption of enterprises, which directly or indirectly benefited by initiation expenditures in the sector of tourism" (Vellas, 2011, p. 4). Secondary economic benefits (indirect and induced ones) of tourism are expressed by the multiplier that captures mutual economic links between single industries in the economy of a territory.

In theory and practice, we can identify several methods of determining multipliers of tourism. Three models may be denoted as relevant and applicable for measuring the multiplier effect of tourism, namely the Keynesian model of multiplier, input-output model (I-O model) and Computable General Equilibrium model (CGE model).The Keynesian multiplier model is based on the employment multiplier developed by Kahn (1931), and it relies on the assumption that the growth of income, employment and consumption is a multiple (result of multiplication effect) of investment increment. By applying the Keynesian multiplier in tourism, Archer (1977) developed the tourism multiplier, which captured indirect and also induced effects of the expenditure by a participant of tourism (Frechtling, 2011). Keynesian model was applied in various studies by many authors (e.g. Jackson, 1998, Dwyer, 2005, Boďa, 2006, Hall, 2009, Piteková, 2009, Mayer, 2010, Bakoš, 2011, Vellas, 2011, Franke, 2012). CGE as a model of computable general equilibrium is technically a follow-up to I-O analysis. There are various opinions of the application of CGE model; according to some authors it represents the best tool for the quantification of economic impacts as a result of continuous changes in tourist expenditures. This model has been used in particular by Dwyer (2005) but also Madden (2002); its advantages and limitations have been analysed also by Frechtling (2011, 2013). However, despite its positive features, as described by these authors, the model has not found a broader application in practice. Its main cause can be seen in its excessively complicated structure and the data-intensive nature of the model. Moreover, the model works with numerous assumptions and simplifications, which finally results in imprecise results. Several studies are available on the assessment of the economic impact of a demand shock that compare the results of CGE and Input-Output analysis. All this studies found that: "Input−Output results are greater than CGE results, but failed to evaluate these results in a more general economic context that considers factor availability and the degree of market efficiency. In

other words, the finding that I-O analysis overestimates the impacts is based on the lower CGE results as benchmarks, but no evidence is presented on how the CGE results represent reality" (Frechtling, Smeral, 2010). According to Briassoulis (1991) Input-output analysis has been used in tourism impact studies because of its (a) comprehensiveness-the input-output model provides a holistic picture of the economic structure of a region (or a system of regions) and enables the analyst to identify interrelationships among economic sectors; and (b) flexibility – depending on the level of detail desired in an application and the available resources, any economic sector can be disaggregated, and its relationships to the other sectors can be traced and studied in detail. Moreover, because (c) tourism is labour intensive, it is characterized by stable production functions.

METHODOLOGY

In the present paper, we apply the input-output value added multiplier of tourism as a value used to measure effects of tourism consumption in the economy that rest in increments of the magnitude under study. Value added as a selected parameter of quantifying the economic effect benefits of the production of the industry enables to identify the value that arose through processing intermediary inputs while using producers' own production sources. Its use within the procedure of determining multiplier effects thus enables to ascertain a relevant economic benefit of production achieved in single multiplication cycles. The use of GVA to measure tourism impacts on the economy is recommended also by authors Ivanov and Webster (2007). They compare this indicator with GDP while considering GVA to be more suitable for measuring economic welfare of population, because it includes all primary incomes.

We consider defining multipliers to be the starting-point of quantifying overall economic benefits of the development of tourism on national level, as the former will enable the calculation of the latter. For the purposes of designing a relevant procedure under conditions of the Slovak economy, we have chosen the Leontief input-output model, which provides the tool for the calculation of all secondary effects resulting from mutual links between individual processes and services. When applying the Leontief model to tourism, a new exogenous parameter is inserted in the model, which expresses the final consumption of tourism (according to methodology the Tourism Satellite Account – internal tourism consumption). The value of the parameter gained from the Tourism Satellite Account of the Slovak Republic (TSA SR). Modelling processes of applications of the Leontief models in the sixties and seventies were characteristic of the emphasis on balance relations by means of the so-called technical co-efficient of direct consumption, i.e. norms or relations between individual parts of the final whole. However, the application of data from the TSA overcomes clumsiness of the model by bringing in dynamics via changes of relevant exogenous variables. The development of the TSA methodology has become an assumption for applying the exogenous parameter. We start from the basic premise of this model, namely, that the sum of intermediate consumption, and the final demand represents an overall production (Hara, 2008). Its essence is a mathematical record of the inverse Leontief matrix as the sum of infinite geometric series (Workie, 2011).

$$\Delta x = (\mathrm{I} - \mathrm{A})^{-1} \times \Delta \mathrm{y} \qquad (1)$$

Δx - Change in the volume of production of the industry

Δy - Change in the consumption of goods and services of the industry by economic entities

$(\mathrm{I} - \mathrm{A})^{-1}$ - Inverse Leontief matrix

By applying this model to tourism environment, it is possible to quantify the changes resulting from the final consumption of participants of tourism in overall volume of production, as well as the influence of the given change on the overall volume of incomes in the economy. The choice of this method for the application to tourism in this paper considers its favourable features and respects basic assumptions for its use as defined in listed sources. In order to achieve a concrete expression of input-output tourism multipliers, there were taken over data on the internal tourism consumption from the database of the TSA SR – Table 5 (year 2013, last available) and used for the symmetric input-output table of the year 2010 (last available year). The time-lag is caused by the methodology used in the construction of calculations based on input-output models, namely The European System of Accounts (Eurostat, 2013), according to which the symmetric input-output tables are construed in five-year intervals. The internal tourism consumption includes expenditures for internal tourism and other consumption components, i.e. imputed rent, natural social transfers of the government and non-profit institutions serving to households. By means of the implementation of the data on the internal tourism consumption into a symmetric input–output table, it has been secured that the process of the calculation of multipliers, and their application may reflect the production of tourism branches, which was consumed for the purposes of satisfying the demand for tourism services. After that, by means of MATLAB software, there were constructed individual partial multipliers. Tourism multipliers are expressed as a weighted arithmetic average of partial multipliers of individual tourism characteristic branches.

In order to determine the economic value of tourism, we used the value added multiplier, the implementation of which enabled the quantification of indirect effects (simple multipliers) and induced effects (induced effect multipliers), i.e. summary components of overall economic benefits of tourism in the Slovak economy across

time monitored. The direct gross value added of tourism is monitored in the TSA SR and it represents part of value added (VA) of all industries of the economy, which directly serves to visitors and was created to cover the internal tourism consumption. Its value is equal to, according to TSA SR methodology as well as according to UNSD (2009), the difference of production and intermediate consumption. Its single components are employees' remunerations, gross operating surplus, and other net taxes on production (Infostat, 2008). It expresses the parameter that arises via production directly in enterprises that represent producers of tourism products. The application of I–O multiplier of tourism to parameter of value added is defined by the following calculations (formula 2 – 5):By means of the product of consumption of a product and a selected simple multiplier we obtain the value, which expresses the sum of direct and indirect effects.

$$C_{IT} \times m_{VAs} = E_d + E_{in} \quad (2)$$

C_{IT} - Internal tourism consumption
m_{VAs} - Simple multiplier VA
E_d - Direct effects
E_{in} - Indirect effects

By the multiplication of consumption of product xy and a selected induced effect multiplier, we will obtain the value which expresses the sum of direct, indirect and induced effects.

$$C_{IT} \times m_{VAi} = E_d + E_{in} + E_{ind} \quad (3)$$
$$E_d + E_{in} + E_{ind} \quad (3a)$$

C_{IT} - Internal tourism consumption
m_{VAi} - Multiplier VA with induced effect
E_d - Direct effects

E_{in} - Indirect effects
E_{ind} - Induced effects
E_t – Total effects

To express net indirect and net induced effects (increments) of value added it is then necessary to use the difference:

$$E_{Nin} = (C_{IT} \times m_{VAs}) - GVA_d \quad (4)$$

E_{Nin} - Net indirect effect (increment)
C_{IT} - Internal tourism consumption
m_{VAs} - Simple multiplier VA
GVA_d - Direct gross value added

$$E_{Nind} = (C_{IT} \times m_{VAi}) - (C_{IT} \times m_{VAs)} \quad (5)$$

E_{Nind} - Net induced effect (increment)

C_{IT} - Internal tourism consumption
m_{VAi} - Multiplier VA with induced effect
m_{VAs} - Simple multiplier VA

RESEARCH RESULTS

The economic value of tourism expressed in overall value added generated by the internal tourism consumption in the Slovak Republic accounted for in the year 2013 the sum of EUR 4.624.912 thousand and may be further considered a key parameter for the assessment of the total economic value of tourism for the year 2013. By means of expressing the share per inhabitant, we can derive the societal value of tourism in a territorial unit. The utilisation and advantage of an indicator of tourism societal value constructed this way rests in particular in a possible comparison of values achieved

in territorial units. The total value added of tourism is derived from the value of internal tourism consumption and its induced multiplier effect on value added. It is calculated by means of the formula mentioned (3), while the value of value added induced effect multiplier is 1.1938.

$$C_{IT} \times m_{VAi} = E_d + E_{in} + E_{ind} \quad (3)$$

$$E_d + E_{in} + E_{ind} = E_t \quad (3a)$$

$$E_t = 3\,873\,980\,000 \times 1.1938 = 4\,624\,912\,000$$

The calculation of value added induced effect multiplier of tourism (for products 1-12):

$$m_{VAi} = \frac{4\,624\,912}{3\,873\,980} = 1.1938$$

In the year 2013 tourism expenditures generated (internal consumption of tourism) in total volume of EUR 3.873. 980 thousand the value added (total of directly and indirectly) in the value of EUR 3.085.424 thousand. The calculation of the data assumes to apply formula (2) and use a relevant multiplier of the value of 0.7964.

$$C_{IT} \times m_{VAs} = E_d + E_{in} \quad (2)$$

$$E_d + E_{in} = 3\,873\,980\,000 \times 0.7964 = 3\,085\,424\,000$$

The increment of value added induced by the final wages consumption of employees in tourism (induced effect) accounted for the value of 1.539.488 thousand EUR. The given result is the net induced effect of value added of tourism and its calculation is done according to formula (5), while the value of a simple multiplier of value added of tourism is 0.7964.

$$E_{Nind} = (C_{IT} \times m_{VAi}) - (C_{IT} \times m_{VAs}) \quad (5)$$

$$E_{Nind} = (3\,873\,980 \times 1.1938) - (3\,873\,980 \times 0.7964)$$
$$= 1\,539\,488\,000$$

The calculation of simple value added multiplier of tourism (for products 1-12) by means of applying the weighted arithmetic mean:

$$m_{VAs} = \frac{3\,085\,424}{3\,873\,980} = 0.7964$$

For the purposes of calculating the production effects of tourism characteristic industries, there were calculated also multipliers linked with them. Pertinent implementation will respect the procedure presented.

The calculation of simple value added multiplier of tourism (for products 1-10)

$$m_{VAs} = \frac{1\,872\,823}{2\,444\,591} = 0.7661$$

The calculation of value added induced effect multiplier of tourism with (for products 1-10).

$$m_{VAi} = \frac{2\,806\,689}{2\,444\,591} = 1.1481$$

Tab. 1: Application of simple multipliers of value added and multipliers of induced effect value added, calculation of direct, indirect and overall effects in tourism, year 2013

Multipliers of value added	**Internal tourism consumption by products, in thousands of EUR in base prices**	**Simple Multiplier of value added**	**Direct and indirect effects of tourism, in thousands of EUR**	**Induced effect multiplier of value added**	**Total effect (including induced one) of tourism, in thousands of EUR**
Characteristic products of tourism (1–10)					

1 – Accommodation services for visitors	543 747	0.789	429 016	1.240	674 246
2 – Restaurants and similar services	539 772	0.789	425 880	1.240	669 317
3-6 – Passenger transport services	757 887	0.750	568 415	1.101	834 434
7– Transport equipment rental	49 294	0.829	40 865	1.046	51 562
8 – Travel agencies and similar	107 552	0.706	75 932	1.036	111 424
9 – Cultural services	226 621	0.741	167 926	0.941	213 250
10 – Sports and recreation services	219 718	0.750	164 789	1.149	252 456
Characteristic tourism goods–country-specific					
11a – Power fuels	296 246	0.846	250 624	1.273	377 121
11b – Selected foods and tobacco	857 922	0.846	725 802	1.273	1 092 135
11c – Selected other consumer goods	149 790	0.846	126 722	1.273	190 683
Characteristic tourism services–country-specific					
12a – Financial and insurance services	3 641	0.839	3 055	1.252	4 559
12b – Rental of other articles	742	0.829	615	1.046	776
12c – Services for personal wellbeing	41 815	0.921	38 512	1.117	46 707
12d –Health services	59 928	0.826	49 501	1.413	84 678
12e – Other selected services	19 305	0.921	17 780	1.117	21 564
Total	**3 873 980**		**3 085 424**		**4 624 912**

Note: Data were processed by means of EXCEL program, which works with 15 decimal digits. The table contains rounded figures of multipliers in order to secure better clarity and functionality.
Source: own

The table above provides a survey of economic benefits of tourism production in the division into industries that produce characteristic and specific products of tourism. In the period under study, it was the production of selected foods and tobacco (23.61%), production of passenger transport services (18.04%), production of accommodation services (14.58%) and restaurants and similar services (14.47%) that contributed to the total economic value of tourism in the Slovak Republic in the highest volume. The same succession also holds for the value expression of direct and indirect benefits of production to the creation of value added in tourism. The same holds also for the absolute expression of net induced effects in the creation of value added of tourism. It indicates some specificity in the pattern of consumption of tourism in the Slovak Republic. Even despite a relatively high value of multipliers of value added identified in group 12 (country-specific services), their economic benefit for the total economic value of tourism is not distinct, which is, of course, connected with low expenditures of consumers on these products within internal tourism consumption. At the same time, a simple multiplier has its highest value in category "Services for personal wellbeing" and "Other selected services". The results given are logically affected apart from other things, also by a differing construction of production in branches monitored and by a participation of the element of "value added" within the value added. For example, health services are a field, which records a rather significant share of value added on production, which, in effect, also influences the value of induced

effect multiplier of value added in tourism. A thorough analysis thus requires to consider many facts and connections.

As far as the creation of direct gross value added of tourism is concerned, based on the data of TSA SR, Tab.10 TSA SR T6 (2013) from tourism industries, it was in particular passenger transport services with the share of 20.37%, sports and recreation services 12.48%, and restaurants and similar services 12.72%, followed by accommodation services 9.52% that participated in the share of the creation of direct gross added value of tourism; all of these are tourism characteristic industries. Overall tourism characteristic industries (1-10) represented the share of 70.8% on the creation of direct gross value added of tourism; tourism industries specific for the Slovak Republic accounted for 4.1%; the share of tourism industries on the creation of direct gross value added of tourism was 74.9%.Tourism characteristic industries are thus essential not only in respect of their importance in the internal tourism consumption (in its value expression) and in the creation of direct gross value added of tourism, but also in the creation of total economic value of tourism as expressed in total gross value added of tourism.

CONCLUSION

The values of simple multiplier indicate a high cohesion of production in tourism industries to other industries and close inter-industry links. The values of multiplier with induced effect in the creation of gross value added of tourism and as the expression of net induced effect indicate the ability of tourism to contribute to the consumption in the national economy. This is achieved by means of the income creation in industries directly or indirectly related to tourism. By means of the quantification of overall economic value of tourism expressed by value added, it is then possible to contribute to strategic perception of value of tourism also in connection with its influence on supplier and follow-up industries of the national economy. Except modifications of key indicator, it is beneficial for

securing the complexity of evaluation to monitor also supplementary indicators constructed as share indicators. In terms of exploring the position of tourism in the economy, it is the indicator of the share of the total gross value added of tourism on the total gross value added in the economy; for the evaluation of economic effectiveness of tourism it is the indicator of total value added created in characteristic industries of tourism per one employee, or the indicator of the total value added created in tourism characteristic industries on one inhabitant, which can be used also to express the societal value of tourism. Compiling an entire complex of measuring societal benefits of tourism requires the implementation of procedures, which demonstrate links and mutual connections between single environment components (economic, social and environmental). In theory and practice, there is not known such a complex system of assessment and subsequent quantification of benefits, which would ascertain the final economic benefit of tourism. The present paper is a contribution to the quantification of economic benefits of tourism to the economy of the Slovak Republic, which may be applied as a consistent part of the assessment of tourism societal value.

RESEARCH LIMITATION AND FUTURE RESEARCH SUGGESTION

Limits of I-O model applicability in the quantification of economic benefits of tourism are based on the following facts: tourism is a heterogeneous industry; its output consists from several industries, which influences also technical coefficients. The method assumes a constant character of technology coefficients. However, in reality it is the changes in technologies, input prices, as well as the changes in the structure of industries that influence the technical coefficients. If these changes are marked, the value of technical coefficients is not objective. Moreover, the model operates on the

assumption of unlimited sources, the offer of which is endless and perfectly elastic. The linear and additive input-output relationships assumed among economic sectors leave out interaction effects. Because of the inter-relatedness of tourism activities, the interactions effects may be important and, consequently, the technical coefficients may not represent realistically the true relationships among sectors (Briassoulis, 1991). Miller and Blair (2009) mention short-term, existence of static linear production function, impossibility of substitution and the use of impacts of economies of scale and the fixed structure of inputs as typical I−O analysis constraints. It is also necessary to note the constraints of using multipliers as a universal tool for evaluating the impacts of changes in separate factors on output indicators. That is only a partial indicator, which does not predicate further impacts of the change of a given factor.

In the authors' future research, the procedure carried out will become part of the system determining the societal value of tourism constructed in the light of the principles of the triple bottom line system. A challenge for future development of the solution described is its application to the regional or the local level. A forward-looking follow-up of the work is also the monitoring of the directions/trends of expenditure impulses and defining multiplication more efficient and less efficient industries. The methodology represents a concept for the possibility of evaluating mutual links of tourism and selected industries (e.g. knowledge-intensive industries), but also comparing the economic performance of tourism with other economic activities.

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