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Rural tourism development in Lithuania (2003–2010) — A quantitative analysis

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ABSTRACT

The objectives of the Rural Development Programme for Lithuania for the period 2007 to 2013 are to: (a) preserve natural and cultural heritage objects, (b) support complementary activity in the rural areas, and (c) generate rural tourism as an economic sector. The aim of this study is to identify current trends specific to the Lithuanian rural tourism sector and propose potential means of development. This study focuses on an inter-county assessment of rural tourism flows within Lithuania by the means of an index decomposition analysis. Consequently, an analysis was undertaken covering factors including the number of the rural tourism farmsteads, spatial distribution of those farmsteads, and capacity, an amended Defert Index, and duration of stay effects. The analysis suggests that the Lithuanian rural tourism sector was negatively affected by the 2008 recession. Indeed, the impacts exhibited relatively high elasticity of demand for rural tourism. Hence, there is a need for the further development of appropriate marketing and information dissemination strategies aimed at both middle and lower income consumers.

1. Introduction

Rural tourism is an efficient mean for both the presentation and preservation of natural and cultural heritage objects, namely buildings, landscapes, traditions, and customs (Daugstad, 2008; MacDonald & Jolliffie, 2003; Su, 2006). These resources, in turn, partially determine the quality as well as selectivity of the service (Балежентис & Ягминас, 2009). Moreover, rural tourism promises an opportunity for the diversification of activities for persons engaged in agriculture (Hjalager, 1996; Sharpley & Vass, 2006). In addition, rural tourism can be considered as a sustainable activity and serve as a basis for sustainable and renewable energy promotion (Chen, 2011; Liu, Feng, & Yang, 2011; Sanagustin Fons, Monsene Fierro, & Gomez y Patino, 2011). Therefore, the Rural Development Programme for Lithuania 2007–2013 (Ministry of Agriculture of the Republic of Lithuania, 2007) identified, as a special measure, the encouragement of rural tourism activities (Axis III, Measure 3), its importance being shown by the allocation of 204 million Lt (US$76.7 million) for the program.

Within the research literature quantitative methods have been applied to rural tourism studies to reveal factors that determine both the demand as well as supply services (Pilar Albaladejo Pina & Diaz Delfa, 2005). For example Pavlyuk (2011) employed stochastic frontier analysis when analyzing tourism efficiency across the Baltic States. With reference to rural tourism, there is a plethora of studies on managerial aspects of the Lithuanian rural tourism (Ramanauskienė, Gargasas, & Ramanauskas, 2007, 2010; Ramanauskienė, Astromskienė, & Andriūnas, 2010; Astromskienė, 2009a, 2009b; Žilinskas & Maksimenko, 2008), but as yet empirical quantitative analysis of country-wide data has not been performed. However, Petrilovskaja and Miškinis (2007) presented an aggregate analysis of the Lithuanian tourism industry. This study, hence makes a contribution by focussing on a national inter-county assessment of rural tourism flows by means of index decomposition analysis. Indeed, the need for planning socio-economic development of certain regions requires such knowledge to improve planning processes.

Index decomposition analysis (IDA) is a widely employed non-parametric method of quantitative analysis. It has been applied in the fields of agricultural economics (Čiulevičienė & Šiuliauskienė, 2006; Genienė, 2007; Baležentis, Baležentis, & Misiūnas, 2011a; Baležentis & Baležentis, 2011; Kriščiukaitienė & Baležentis, 2011), macroeconomics (Pocius & Okunevičiūtė-Neverauskienė, 2005; Valkauskas, 2006; Mackevičius & Molienė, 2009), and energy studies (Baležentis, Baležentis, & Štreimikienė, 2011b). However, IDA is still under-used in the tourism studies. Hence, this paper also contributes to the literature by suggesting a new framework for tourism flow analysis based on this technique of analysis and the use of the logarithmic mean Divisia index.

The aim of this study is to identify the current trends peculiar to the Lithuanian rural tourism sector and thus offer prospective development directions. Therefore, the following tasks were set: 1) to present index decomposition analysis and define the indicator set for tourism flow analysis; 2) to perform statistical analysis of the indicators; 3) to employ index decomposition analysis; and 4) to discuss the main future challenges.

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The subject of the research is the rural tourism sector of Lithuania using data collected from Statistics Lithuania database (Statistics Lithuania, 2011) for the period 2003–2010.

2. Preliminaries for index decomposition analysis

Index decomposition analysis is a non-parametric method enabling the researcher to quantify pre-defined factors influencing certain phenomenon. In this study the logarithmic mean Divisia index (LMDI), type I, was employed for index decomposition analysis (IDA) of the changes in the total number of stays in the Lithuanian rural tourism farmsteads.

The following LMDI computations were reported by Ang (2005). Let V be an aggregate variable with n factors influencing changes in V over time and each is associated with respective variable from set $x_1, x_2, \ldots, x_n$. Let there be ith sub-categories of the aggregate. For the ith sub-category, the following equation holds: $V_i = \prod_{j=1}^{n} x_{ji}$. The general IDA identity is therefore given by:

$$V = \sum_i V_i = \sum_i \prod_j x_{ji}, \tag{1}$$

where $i = 1,2,\ldots,m$ and $j = 1,2,\ldots,n$. Hence, the aggregate changes from $V_i^0 = \prod_{j=1}^{n} x_{ji}^0$ in period 0 to $V_i^T = \prod_{j=1}^{n} x_{ji}^T$ in period T. In case of additive decomposition, we decompose the difference:

$$\Delta V = V^T - V^0 = \Delta V_{x_1} + \Delta V_{x_2} + \ldots + \Delta V_{x_n}. \tag{2}$$

As for multiplicative decomposition, we decompose the ratio:

$$D = V^T / V^0 = D_{x_1} D_{x_2} \ldots D_{x_n}. \tag{3}$$

Indeed, the terms on the right-hand side are the effects associated with respective factors in Eq. (1).

In the LMDI approach, the following generalized equations describe the effect of the kth factor in Eqs. (2) and (3), respectively:

$$\Delta V_{x_k} = \sum_i \frac{V_i^T - V_i^0}{\ln V_i^T - \ln V_i^0} \ln\left(\frac{x_{ki}^T}{x_{ki}^0}\right), \tag{4}$$

$$D_{x_k} = \exp\left(\sum_i \frac{\left(V_i^T - V_i^0\right)/\left(\ln V_i^T - \ln V_i^0\right)}{\left(V^T - V^0\right)/\left(\ln V^T - \ln V^0\right)} \ln\left(\frac{x_{ki}^T}{x_{ki}^0}\right)\right), \tag{5}$$

where $k = 1,2,\ldots,n$. These generalized formulae, however, need to be customized for each particular case. Indeed, such a specification of the indicator system and their relations constitute the focal part of the whole IDA.

In order to analyze the underlying processes influencing the rural tourism flow in Lithuania, the following effects were defined:

1) N — number of the rural tourism farmsteads (an extensive factor);
2) S_i — spatial distribution of the rural tourism farmsteads across different counties (structure effect);
3) C_i — capacity effect, i.e. the mean number of beds available per farmstead in certain region;
4) I_i — intensity effect, i.e. the number of tourists arrived compared to the number of beds available (an intensive factor);
5) L_i — length effect, i.e. the mean length of stay in a rural tourism farmstead (an intensive factor).

It should be noted that the first three effects are related with the supply of rural tourism services, whereas the remaining two are mainly focussed on demand. Given the study analyzes data at the county level, these effects are specified for each ith county ($i = 1,2,\ldots,m$). Then, the following equation describes the changes in tourism flow:

$$Q = \sum_i N \frac{N_i}{N} \frac{B_i}{N_i} \frac{T_i}{B_i} \frac{Q_i}{T_i} = \sum_i N S_i C_i I_i L_i, \tag{6}$$

where

Q is total number of stays (nights spent) in rural tourism farmsteads;
N is the total number of rural tourism farmsteads in Lithuania;
Q_i is total number of stays in rural tourism farmsteads for the ith county;
N_i is the total number of rural tourism farmsteads in the ith county;
B_i is the mean number of beds in a farmstead for the ith county;
T_i is the number of tourists arrived to the rural tourism farmsteads in the ith county.

Consequently, the following formula describes changes in the total tourism flow:

$$\Delta Q = Q^T - Q^0 = \Delta Q_N + \Delta Q_S + \Delta Q_C + \Delta Q_I + \Delta Q_L, \tag{7}$$

The respective effects $\Delta Q_N, \Delta Q_S, \Delta Q_C, \Delta Q_I, \Delta Q_L$ can be estimated by employing the following equations:

$$\Delta Q_N = \sum_i \bar{Q}_i \ln\left(N^T / N^0\right), \tag{8}$$

$$\Delta Q_S = \sum_i \bar{Q}_i \ln\left(S_i^T / S_i^0\right), \tag{9}$$

$$\Delta Q_C = \sum_i \bar{Q}_i \ln\left(C_i^T / C_i^0\right), \tag{10}$$

$$\Delta Q_I = \sum_i \bar{Q}_i \ln\left(I_i^T / I_i^0\right), \tag{11}$$

$$\Delta Q_L = \sum_i \bar{Q}_i \ln\left(L_i^T / L_i^0\right), \tag{12}$$

where $\bar{Q}_i = \frac{Q_i^T - Q_i^0}{\ln Q_i^T - \ln Q_i^0}$.

Similarly, the following formula describes changes in multiplicative form:

$$D = Q^T / Q^0 = D_N D_S D_C D_I D_L, \tag{13}$$

where:

$$D_N = \exp\left(\sum_i (\bar{Q}_i / \bar{Q}) \ln\left(N^T / N^0\right)\right), \tag{14}$$

$$D_S = \exp\left(\sum_i (\bar{Q}_i / \bar{Q}) \ln\left(S_i^T / S_i^0\right)\right), \tag{15}$$

$$D_C = \exp\left(\sum_i (\bar{Q}_i / \bar{Q}) \ln\left(C_i^T / C_i^0\right)\right), \tag{16}$$

$$D_I = \exp\left(\sum_i (\bar{Q}_i / \bar{Q}) \ln\left(I_i^T / I_i^0\right)\right), \tag{17}$$

$$D_L = \exp\left(\sum_i (\bar{Q}_i / \bar{Q}) \ln\left(L_i^T / L_i^0\right)\right). \tag{18}$$

Hence, the aforementioned formulae enable one to estimate the effects of the number of rural tourism farmsteads in the market, the spatial distribution thereof, their capacity, tourism "intensity" as measured by an amended Defert Index (here defined as the ratio between available bed spaces and visitor arrivals), and the duration of the total number of stays.