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# EFFECTS OF TOURISM SEASONALITY AT LOCAL LEVEL

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**Abstract**

*The paper underlines the importance of identifying seasonality effects over tourism development. The study applies a simple test for examining the presence of seasonality in tourism demand in the line of exploring its concentration and strength at local level. The investigation is covered by calculating some commonly applied indicators for measuring tourism seasonality, like Gini coefficient, Seasonality Indicator and Coefficient of Variation. The data set addresses the total tourist arrivals between 2000-2013 and elaborates the case of Ohrid, as the most famous tourist destination in Macedonia. The research results point to high level of tourism seasonality with significant flow distribution to tourism development. Finally, the study may serve as a base for identifying measures and activities necessary for creating comprehensive local and regional tourism policy.*

**Keywords:** seasonality, tourism development, tourism policy

**JEL classification:** L83, O10

## 1. INTRODUCTION

Regardless the level of economic development, each country is interested in tourism due to its various positive impacts. Generally, tourism contributes to economic growth and development, promoting international understanding and peace, improving living standard, stimulating local trade and industry development, protection of cultural heritage etc. (Goeldner *et al.*, 2000). In this line, seasonality is noted as one of the most influencing factor for limiting continuous development. So, one may understand it as a phenomena that provokes incomplete and unbalanced usage of means necessary for economic development (BarOn, 1973).

This research attempts to answer the main investigation question for examining any seasonal patterns in tourism at local level, by exploring the case of Ohrid as the most famous tourist destination in Macedonia. The research aim is two-folded:

- Firstly, to gain in-depth knowledge regarding seasonal patterns of tourism in Ohrid; and

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- Secondly, to empirically test and analyse the strength of seasonality in tourism demand at local level.

In order to meet the research aims, the paper is structured in several parts. After the introductory part, Section two gives a brief overview on theoretical aspects of the main reasons for seasonality in tourism flows, underlining the most profound negative, as well as positive effects. A snapshot on stylized facts on tourism flows of Ohrid is given in Section three, while the research design encompassing the methodology and research frame are posed in Section four. Section five presents the main research findings and discussion, while the conclusion remarks are noted in last part of the paper.

Generally, the contribution of this paper is the attempt to quantify seasonality patterns of tourism demand at local level, which is a novelty in Macedonia's academic work. Some exceptions are noted, but in addressing seasonality effects at national level of Macedonia (Petrevska 2013a, 2013b and 2013c).

## 2. LITERATURE REVIEW

Seasonality in tourism has been a subject of interest among researchers and academicians thus provoking continuous debates and argumentations (BarOn, 1993, 1999; Baum, 1999; Chung, 2009; Higham and Hinch, 2002; Jang, 2004; Lundtorp, 2001; Yacoumis, 1980). Yet, they all generally agree that seasonality is occurred due to temporary imbalance in tourism flows caused by three types of factors:

1. Nature (sunny days, snow falls, insolation etc.);
2. Institutional factor (religious and pilgrimage travel, workers' holidays, students' ferries, festival events etc.); and
3. Other factors (social pressure, personal preferences, inertness etc.).

Moreover, it is noted that this type of systematic variations may be present during the year, semester, but also in the frames of a month or a week, even in a single day (Holloway, 1994; Lundberg *et al.*, 1995). Each of them may have positive or negative influence on tourism development.

If having negative consequences over tourism development, the researches pose the fact that seasonality may not be controlled (Allcock, 1989; Edgell, 1990; Laws, 1991; Snepenger *et al.*, 1990; Szivas *et al.*, 2003). In this respect, they all refer to damaging influences in:

- Employment (part-time employment, social instability and insecurity etc.);
- Investments (high risks over low occupancy rate); and
- Environment (pollution, overcrowding, xenophobia, criminal activity etc.).

Thankfully to various methods for detecting seasonality, one may identify and introduce measures and activities in order to cope and overcome negative impacts on tourism. As the most commonly applied methods, the academicians note: extension of the season by introducing new tourist products immune to seasonality; application of positive pricing policy; developing business tourism, etc. (Nadal *et al.*, 2004; Sutcliffe and Sinclair, 1980; Witt *et al.*, 1991).

On the other side, there is a large body of literature that elaborates an approach that seasonality provokes positive effects as well, particularly in terms of sociology and ecology. Namely, after devastating high season, long and quiet period is more than welcomed especially for recovering the sources, and the local population as well (Butler, 1994; Drakatos, 1987; Grant *et al.*, 1997; Hartmann, 1986).

## 3. TOURISM FLOW DISTRIBUTION OF OHRID

Ohrid is the most famous tourist destination in Macedonia that generally develops summer tourism simultaneously with other forms of alternative tourism (cultural, congress, etc.). Table 1 presents some stylized facts on tourism data for Ohrid for the period 2000-2013.

It is noticeable an upward trend during the sample with the exception of 2001 (war conflict in Macedonia) and stagnation in 2010 (World economic crisis). Up to 2008, domestic tourists are by far dominant over the foreigners by encompassing up to 69% of total tourist arrivals. Yet, due to governmental measures and activities for supporting and enhancing tourism development by introducing subsidies, the proportion changed in favour to foreign tourists. Namely, a rapid decline of domestic tourists may be noted starting from 2009 to 2013, leading to 'only' 48% participation in total tourist arrivals. Consequently, in 2013 foreign tourists overtook the leading role for the first time in tourism development of Ohrid by covering 52% of total number of tourists. However, the average absolute numbers for the sample period illustrate dominancy of domestic tourists with 117,578 arrivals towards 55,632 arrivals of foreign tourists.

Figure 1 presents the number of tourists that visited Ohrid for the period 2000-2013, by quarters. One may visually conclude that Quarter 3 (comprised of summer months: July, August and September) encompasses the largest quantum of tourists and travellers, thus representing the highest peak-point i.e. the high season. Moreover, this quarter covers 61% (or 105,925 total tourists) of total average tourism demand for the sample period. This may be explained with fact that in Quarter 3 tourism demand is the highest due to presence of multiple factors. Namely, in these months, the usage of holidays and ferries is the highest (institutional factor), there is hot and sunny weather (natural factor) and there is a manifestation of personal preferences and attitudes of tourists and travellers (other factors). The fact that Ohrid is a summer tourist destination explains the high average numbers for July (47,856 tourists or 28%) and August (46,222 tourists or 27%). Consequently, at first glance this may seem as a strong seasonality pattern, which is additionally confirmed by an in-depth analysis.

**Table no. 1 – Tourist arrivals in Ohrid, 2000-2013**

| Year | Domestic | Foreign | Total |
|---|---|---|---|
| 2000 | 153,510 | 56,318 | 209,828 |
| 2001 | 86,258 | 11,499 | 97,757 |
| 2002 | 137,911 | 25,517 | 163,428 |
| 2003 | 136,420 | 39,390 | 175,810 |
| 2004 | 114,652 | 37,522 | 152,174 |
| 2005 | 116,401 | 49,564 | 165,965 |
| 2006 | 114,754 | 52,640 | 167,394 |
| 2007 | 123,854 | 57,456 | 181,310 |
| 2008 | 139,643 | 62,461 | 202,104 |
| 2009 | 122,258 | 67,441 | 189,699 |
| 2010 | 105,213 | 59,896 | 165,109 |
| 2011 | 102,730 | 75,547 | 178,277 |
| 2012 | 99,850 | 83,485 | 183,335 |
| 2013 | 92,637 | 100,109 | 191,504 |
| Average 2000-2013 | 117,578 | 55,632 | 173,121 |

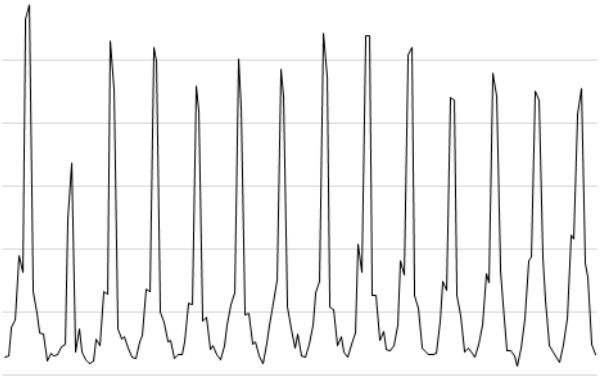

**Figure no. 1 – Distribution of tourism flows in Ohrid, 2000-2013**

## 4. METHODOLOGY

The research is mainly covered by quantitative approach in order to meet the set objectives. In this respect, the analysis of seasonal concentration of tourism demand is done by computing the Gini coefficient (G), the Seasonality Indicator (SI) and the Coefficient of Variation (CV). The main variable applied in this research is total number of tourists on monthly basis that visited Ohrid. The data is provided by a secondary source, in this case from the on-line data base of the State Statistical Office of the Republic of Macedonia. Due to public unavailability of the data for previous years, the sample spreads over the period 2000-2013. Calculations for G, SI and CV are based on standard equations (Eq. 1, 2 and 3).

The Gini Coefficient is first developed and introduced in 1912, and since then it is one of the most commonly used coefficients for measuring inequality of revenues caused by temporary disorders. Moreover, the Gini coefficient is often applied as appropriate measure for expressing seasonality in tourism (Arnold, 2008; Bigovic, 2012; Black, 2002; Fernández-Moralez, 2003; Lim and McAleer, 2008; Nadal *et al.*, 2004). In this respect, different approaches are noted for calculating the Gini coefficient (Xu, 2003). Its value spreads between 0 and 1, whereas bigger G represents bigger inequity i.e. seasonality in tourism, and vice versa. In this research, the Gini coefficient on yearly basis is calculated upon standard equation (Eq. 1).

$$G = 2/n\ \Sigma n_i=1\ (x_i - y_i) = 2/n[(x_1 - y_1)+ (x_2 - y_2)+\ldots+((x_n - y_n)] = 2/n[\Sigma n_i=1\ x_i\ - \Sigma n_i=1 y_i] \quad (1)$$

whereas:

n denotes number of months;

$x_i$ denotes rank of the months (1/12, 2/12, ..., 12/12); and

$y_i$ denotes cumulative relative frequency of tourist arrivals in rank by ascending order.

The Seasonal Indicator is additional measure for quantifying empirically observed seasonality patterns in tourism. Most commonly is calculated as an inverse value of the Seasonality Ratio (Wanhill, 1980; Yacoumis, 1980). Its value ranges from 1/12 up to 1, whereas bigger SI represents absence of fluctuation during the year, i.e. seasonality in tourism, and vice versa. In this research, the SI is calculated upon standard equation (Eq. 2).

$$SI = \frac{y_0}{y_n} \quad (2)$$

whereas:

$y_0$ denotes the average number of tourist arrivals per year; and

$y_n$ denotes the highest number of tourist arrivals in the particular year.

The Coefficient of Variation describes the fluctuation of tourists during the year. Moreover, it measures the spread of each series around its annual mean as a percentage of that mean. This indicator is particularly useful for comparing dispersion in data sets having different standard deviations and different means. It can take values beginning with zero. If the value is small, than the distribution is much homogenous and the average is much representative. Yet, despite the simplification in calculating it, it may be difficult to interpret the results appropriately (Lundtorp, 2001). In this research, the CV is calculated upon standard equation (Eq. 3).

$$CV = \frac{s}{\bar{y}} \quad (3)$$

whereas:

s denotes the standard deviation; and

$\bar{y}$ denotes the mean of the observations in the particular year.

## 5. ANALYSIS, RESULTS AND DISCUSSION

Since the main aim is to calculate G, SI and CV for tourism demand of Ohrid for the sample period, some previous calculations must be undertaken. In this line, Table 2 presents calculations of the rank of fractiles i.e. months in a year. In addition, due to their consistency, the obtained data are applied in further calculations, particularly in computing the G values.

**Table no. 2 – Calculations of fractiles' rank**

| xi |
|---|
| 1/12 = 0.08 |
| 2/12 = 0.17 |
| 3/12 = 0.25 |
| 4/12 = 0.33 |
| 5/12 = 0.42 |
| 6/12 = 0.50 |
| 7/12 = 0.58 |
| 8/12 = 0.67 |
| 9/12 = 0.75 |
| 10/12 = 0.83 |
| 11/12 = 0.92 |
| 12/12 = 1.00 |
| Total = 6.50 |

Since the fractiles' rank are computed, the calculations proceed by obtaining further data. So, Table 3 presents cumulative relative frequency of tourist arrivals by ascending order on yearly basis (yi). Additionally, Table 3 presents the difference between number of fractiles and the cumulative relative frequency in rank (Σxi - Σyi).

**Table no. 3 – Computing data for G**

| Year | yi | Σxi - Σ yi |
|---|---|---|
| 2000 | 3.525402 | 2.974598 |
| 2001 | 3.498276 | 3.001724 |
| 2002 | 3.248556 | 3.251441 |
| 2003 | 3.424686 | 3.075314 |
| 2004 | 3.439346 | 3.060654 |
| 2005 | 3.544259 | 2.955741 |
| 2006 | 3.491559 | 3.008441 |
| 2007 | 3.484110 | 3.015890 |
| 2008 | 3.525452 | 2.974548 |
| 2009 | 3.501879 | 2.998121 |
| 2010 | 3.566910 | 2.933090 |
| 2011 | 3.564795 | 2.935205 |
| 2012 | 3.595478 | 2.904522 |
| 2013 | 3.651987 | 2.848013 |

The calculated values for G, SI and CV for the sample period are presented in Table 4.

**Table no. 4 – Gini coefficient, Seasonality Indicator and Coefficient of Variation**

| Year | G | SI | CV |
|---|---|---|---|
| 2000 | 0.4958 | 0.2973 | 110.9 |
| 2001 | 0.5003 | 0.2419 | 124.5 |
| 2002 | 0.5419 | 0.2557 | 125.9 |
| 2003 | 0.5126 | 0.2815 | 118.3 |
| 2004 | 0.5101 | 0.2754 | 117.9 |
| 2005 | 0.4926 | 0.2748 | 112.9 |
| 2006 | 0.5014 | 0.2862 | 112.5 |
| 2007 | 0.5026 | 0.2780 | 114.1 |
| 2008 | 0.4958 | 0.3115 | 108.0 |
| 2009 | 0.4997 | 0.3037 | 109.9 |
| 2010 | 0.4888 | 0.3117 | 106.9 |
| 2011 | 0.4892 | 0.3094 | 104.3 |
| 2012 | 0.4841 | 0.3380 | 98.3 |
| 2013 | 0.4747 | 0.3501 | 93.1 |
| Average 2000-2013 | 0.4993 | 0.2939 | 111.2 |

With regards to the Gini coefficient, Table 4 poses that the values spreads between 0.4747 and 0.5419. The average value of G for the period 2000-2013 is 0.4993. The data show that seasonality in terms of intra-year monthly variations in tourist arrivals is relatively constant during the 14-year period. Due to fact that research calculations referring Gini coefficient are almost equal to the margin of 0.5, one may conclude a presence of high seasonality in tourism. Namely, the high values of G show that current distribution of tourism demand for the sample period, has substantial meaning to Ohrid. Hence, the concentration in terms of tourist arrivals in Ohrid points to significant unbalance and large inequality. Thus, the high peaks in the third quarter, particularly in July and August have sufficient capacity and strength for serious influence with an in-depth manner.

It can be noted that all calculated values of G are similar, almost identical and approximately constant with small negligible variations. This points to conclusion that during the sample period there was always meaningful and strong seasonal patterns in tourism in Ohrid. So, one may conclude high tourism seasonality in Ohrid with significant characteristics, particularly in summer months.

The graphical representation of the computed G values is visually posted in Figure 2. In this line, the Lorenz curve assists in observing 'the cumulated frequencies in rank with the lowest frequency (winter month) to the left and the month with the highest number of tourists to the right' (Lundtorp, 2001): 30. From Figure 2 it is noticeable that the average Lorenz curve of Ohrid (average for 2000-2013) is positioned relatively away from the Line of equity, which announces presence of seasonal concentration. Furthermore, the area between the average Lorenz curve of Ohrid and the Line of equity is relatively big, thus pointing to unequal seasonal distribution of tourist arrivals and presence of seasonal concentration at local level during the year, being supportive to the constant, similar and high values of G.


**Figure no. 2 – Average Lorenz curve of Ohrid, 2000-2013**

Concerning the Seasonality Indicator, one may adhere from Table 4 that the calculated values for the sample period range between 0.2419 and 0.3501 noting an average value of 0.2939. Since all computed data are relatively close to zero, one may argue strong fluctuation within a year. Therefore, upon the calculations for SI, one may conclude the presence of resilient tourism seasonality in Ohrid.

Besides the G and the SI, the research encompasses data regarding the Coefficient of Variation. It is used in order numerically to measure stability of tourism demand distribution in the sample period. Table 4 presents data on CV spreading between 93.1% and 125.9%. The average value of CV during the sample period is 111.2% which is far above the limit of 35-40% pointing to non-homogeneous distribution and conclusion that the average is no more representative. Furthermore, the data must be separated in components by groups depending on the variation of another group variables.

The research outcomes point to conclusion for having strong seasonality in tourism in Ohrid, most probably underlining it as the most profound negative effect for further more balanced local tourism development.

## 6. CONCLUSION

This paper aims to recall the importance of seasonality as one of the major and profound limits for tourism development. In this respect, a brief overview is presented on reasons for the most examined negative effects of tourism seasonality. Additionally, some approaches referring positive impacts due to seasonality have been noted.

In the same time, the research investigated the seasonality effects over local tourism development, by elaborating the case of Ohrid, as the most famous summer tourist spot and a "must-see" destination. In this line, the data registered as the highest peaks in the third quarter in each year, visually pointed to the presence of seasonality. The statistics regarding tourist arrivals which present the largest figures, may be generalized, and interpreted as strong and powerful seasonality in tourism flows. The research posed that in Quarter 3 exists cumulative influence of all factors that provoke extended concentration and increased demand. Such situation includes: acceptable and favourable weather conditions; extensive isolated days; usage of vacations and ferries; personal preferences for summer season etc.

Furthermore, the paper presents the research findings upon the main aim of the empirical investigation. So, in order to investigate seasonality in tourism demand in Ohrid, the basic variable used in the calculation is tourist arrivals on monthly basis. The sample spreads between 2000-2013. The research outcomes gave a scientific clarification for having strong and robust seasonality patterns in tourism in Ohrid. Moreover, the findings point to fact that distribution i.e. concentration of tourism demand in terms of tourist arrivals is substantial and has considerable meaning for further local and regional tourism development. In the first line, the negative effects of seasonality can be observed by extremely low average length of stay of tourists in off-seasons. Namely, the average duration of stay of all tourists is 8 days in July and August towards only 2 days in other months of the year. This additionally results with low level of bed and room occupancy rates of all accommodation facilities in Ohrid.

The strong effects of tourism seasonality can be managed, mitigated and controlled, but cannot be avoided. Despite numerous attempts to overcome seasonality at local level, still plenty needs to be done, such as: lengthening the main season, establishing additional seasons, diversifying markets, using differential pricing and tax incentives on a temporal basis, encouraging the staggering of holidays, boosting domestic tourism in off-seasons, and providing off-season attractions or events. In addition, special events such as festivals and conferences may help to overcome the seasonal effects, if they take place in the shoulder or off-season. It could be pointed out, however, that tourists expect to have attractive programs organized during the main season and out of it. So generally, in order to address the negative effects of seasonality, one may argue introducing different strategies in the line of supporting further local tourism development, like:

- Differential pricing (seasonal/promotional pricing; group booking offers etc.);
- Diversified attraction (changing the product mix);
- Market diversification (determination of optimal segment mix);
- Facilitation by the state and local players (loans or subsidies; tax concession; legislative initiatives; partnerships etc.).

Yet, one must address the positive effects that seasonality provokes as well. Namely, after devastating fifty days of high season in Ohrid, the environment as well as the local population may welcome a long and quiet period free from overcrowding, xenophobia, criminal activity and similar negative effects that tourism development brings. The scarce

resources that Ohrid has in terms of protected natural and historical locations (Lake Ohrid, National park Galicica, over one hundred religious and spiritual locations etc.), need time to rest from tourist activity due to their limit beyond which can suffer from the adverse tourism impacts. Such pressure needs to be processed by integrated planning and management simultaneously maintaining satisfaction of tourist supply and demand, as well as the needs of local residents.

The research was limited by several factors that may be addressed in some future work. Firstly, the sample period (2000-2013) is rather short due to publically unavailable data. In case of having longer time series, the conclusions on seasonality impacts on local tourism development may have more serious meaning since it will reflect much extensive time-frame. Secondly, the investigation uses relatively simple technique which all-the-way can be helpful in some contexts. Yet, the outcomes may be enhanced by employing more advanced methods, like: SARIMA (Seasonal Autoregressive Moving Average) models, TQSAR (Two-Quarter Smoothed Annualized Rate) method, HP (Hodrick-Prescott) filter smoothing method, BSM (Basic Structural Model), HEGY test etc. Although these methods process seasonality fluctuations of tourism data in more precise manner, still there is no clear answer to the ways in which seasonality in tourism demand modelling could be better handled.

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