Seasonal Concentration of the International Hotel Demand in Algeria: A Measurement and Decomposition by Nationalities

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Abstract

In this research paper, we have tried to measure and decomposition the Gini coefficient of seasonal concentration of international hotel demand in Algeria by nationalities so that it could be possible to quantify the seasonal variations, and to estimate the relative contribution of each tourist segment to the overall concentration and its marginal effects. This may help the authorities to develop efficient strategies that reduce the seasonal variation of international hotel demand in Algeria. Our results suggest that planners may concentrate their efforts in consolidating markets with negative marginal effect over the index of concentration, in the peak season like countries exporting Algerian living abroad and Arab tourists. In addition, marketing targets may be focused primarily in the off peak season for the markets with positive relative marginal effect like countries exporting foreigner tourist.

Keywords: seasonality measures, international demand hotel, Gini coefficient, Algeria

1. Introduction

Tourism has, over six decades, been continuously expanding and diversifying and become one of the greatest and most developing economic sectors in the world. Despite political and economic shocks, the international movement of tourism has been continuously developing: from 25 million tourists in 1950, to 278 million tourists in 1980, to exceed one billion tourists in 2013. It has known, according to its regulating laws, a non balanced territorial distribution. In fact, 75% of the tourism movements were confined in two regions of the world (Europe, Asia & Pacific) (World Tourism Organization [WTO], 2013). The resting rate was distributed on other tourism regions. Algeria has ranked fourth in Africa after Morocco, South Africa and Tunisia with a rate of 5 % (WTO, 2014).

If the tourism movement varies territorially, it varies temporally as well according to days, weeks and months; having thus active tourism seasons and recession seasons during which there is a low demand on the concerned destination; and having also numerous negative effects on the national and regional levels and on the economic, social and environmental dimensions. While everyone insists that the treatment of the tourism seasonality and alleviation of its effects have become a priority if we want to exploit tourism as an inexhaustible natural resource to make a durable economic recovery; we want to contribute resolving this problem through measuring the seasonality of the international hotel demand in Algeria, and decomposition it by nationality in order to ask the following main question:

How do the measurement and decomposition by nationalities of seasonal concentration of the international hotel demand in Algeria contribute in developing the strategies of its tackling?

1.1 Hypothesis of the Study

This study hypothesizes that measuring the seasonality of the international hotel demand permits to understand its main characteristics in matters of pattern and amplitude, and that its decomposition by market of nationalities helps determining the contribution of each market in and its relative effect on the overall seasonal concentration. These understanding and determination are expected to develop the strategies for periods and markets that lessen their seasonal concentration.

1.2 Importance and Purposes of the Study

Generally, the contribution of this paper lies in the fact that represents first attempt empirically to measure and decomposition the seasonality tourism in Algeria. It is thus a new contribution to the economic researches that have dealt with the issues of tourism in the Algerian economy. Our study is aimed at obtaining results that may orient the concerned authorities about the priorities to fulfil in order to incite the international hotel demand in a manner that alleviates its seasonal concentration in Algeria.

In order to explore the hypothesis, the paper is structured in several parts. After the introductory part, there is a section that gives a brief overview on main reasons for seasonality in tourism flows, underlining the most profound negative, as well as positive effects. The research design encompassing the methodology and research frame are posed in Section tree. Section four presents the main research findings and discussion, while the conclusion remarks are noted in last part of the paper.

2. Theoretical Framework of the Study

2.1 The Concept of the Tourism Seasonality

Likewise the other economic sectors, that of tourism is characterised by temporal variations in the volume of its activity, in a way that this volume increases to reach its peak in some periods of the year, but relatively decreases or stops in some other periods of the same year. This state of things leads to the appearance of what is called "**seasonality**". It is one of the major problems of tourism industry (Ferna'ndez-Morales, 2003), the most important factors affecting tourism demand (Bigović, 2001) and one of the least understood (Higham & Hinch, 2002).

The studies which have dealt with the tourism seasonality point out the difficulty of giving it a unified definition. In fact, many researchers who have been interested in this phenomenon have endeavoured to give and explain their personal vision of it. The proof is that there is a multitude of definitions in its literature. Baron (1975) gave the first definition of tourism seasonality in the following terms: "The effects occurring each year with more or less in the same timing and magnitude" (Koenig & Bischoff, 2005). Butler (2001) considered the seasonality as: "a temporal imbalance in the phenomenon of tourism, which may be expressed in terms of many dimensions such as number of visitors, expenditure of visitors, traffic on highways and other forms of transportation, employment and admissions to attractions" (Butler, 2001). As for Chung (2009), seasonality is: "a global tourism phenomenon caused by temporary movement of people" (Chung, 2009).

Despite the diversity of the definitions of the tourism seasonality, all agree that it is the system of movement of tourism in the destinations during the year (Hylleberg, 1992), resulting from the yearly repeated temporal variations of tourism rush, on a daily, weekly, monthly or yearly basis (Cooper et al., 2008), in a way that leads to an unbalanced use of the different means of the sector in the tourism destination.

2.2 Seasonal Patterns of Tourism

Most tourism destinations pass by a cyclic experience of tourism activity divided into a peak-season and an off-season. These two types of season are separated by two shoulder seasons (Geoffrey et al., 2006). This forms several types resulting from regular or irregular fluctuations that occur only in some periods of the year (Cooper et al., 2008). According to (Butler & Mao, 1997), seasonality has four pattern:

2.2.1 One-Peak Seasonality

It is the most extreme type of seasonality. It occurs in destinations where the tourism demand in some specific months of the year is greater than it is in the other months of the same year. This occurs because the seasonal pattern of demand in a generating region matches the seasonal pattern of attractiveness of a destination (Vergori, 2012), as it is the case in some Mediterranean destinations.

2.2.2 Two-Peak Seasonality

It occurs when there are two seasons: a major one and a minor one; in a way that each season satisfies a kind of demand, such as mountain regions, which attract both summer and winter tourists. The Caribbean countries are the best example of this type of seasonality.

2.2.3 Non-Peak Seasonality

It occurs in urban destinations such as Singapore and Hong Kong, where there is a tourism movement all along the year.

2.2.4 Dynamic Seasonality

It is also called "multiple-demand seasonality". It is not associated with a fixed period.

2.3 Causes of Tourism Seasonality

There are many essays to understand and classify the causes of seasonality. In fact, researchers have different views of these causes which take different forms depending on the destination and its nature (Kolomiets, 2010). Baron (1975) pointed out the natural and institutional causes, which have been confirmed by the majority of researchers. The natural causes are associated with the climate elements. This kind of seasonality is called "natural seasonality". As for the institutional causes, they mainly relate to the legislations, leaves and holidays which lead to what is called "the institutional seasonality" (Bigović, 2011). Butler (2001) considered that the social factors (social pressures, tastes and preferences, sporting seasons and traditions) are causes of seasonality (Butler, 2001). Baron (1975) pointed out the economic factors, such as the prices of services in different tourism seasons, which may contribute in the increase or decrease of the seasonal concentration of tourism activities (Koenig & Bischoff, 2005). (Frechtling, 1996) added the calendar effects, as the month of Ramadan in the Islamic countries.

Lundtrop, Rassing, and Wanhill (1999) have given an alternative classification of the causes of seasonality, in a way that the seasonal character of the tourism activity in a given destination is the combination of interaction of a group of push factors in the tourist generating countries and pull factors in the receiving countries (Koenig & Bischoff, 2005), as shown in the following figure:
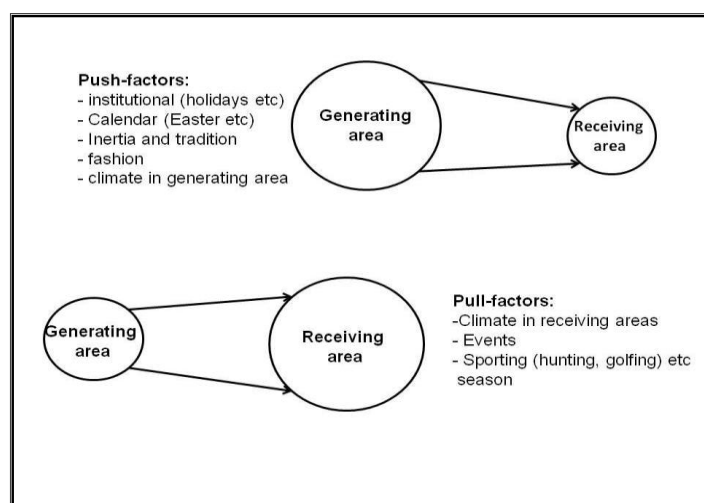

Figure 1. Push and pull factors causing the tourism seasonality in destination (Lundtorp, Rassing, & Wanhill, 1999)

So, the seasonality occurs because of the interaction of a number of causes relating to both the generation and receiving areas.

2.4 Effects of the Tourism Seasonality

Most researchers consider seasonality as a negative phenomenon (Bender et al., 2007), not only in the economic sense, but also in the socio-cultural and ecological sense. The economic factors are often associated with the problems of overuse or under-utilization of the tourism resources which undergo an excessive pressure in the peak-season, and are let unused or underexploited in the rest of the year (Bender et al., 2005), where their economic value becomes null (Chung, 2009). This pushes the investors to double their endeavours in order to achieve a high income in the periods of seasonal saleability and compensate the probable losses in the off-season. So, they raise the prices to a level that guarantees a minimum of profits to cover at least the fixed expenditures. Moreover, the temporary character of the tourism work affects negatively the loyalty and commitment of customers in a way that affects the quality criteria of the tourism products in the main season (Koenig & Bischoff, 2005). At the social level, the seasonality exerts a sort of pressure on the social absorptive capacity of the tourism destinations. It causes social problems in the receiving society that are mainly associated to the great increase of the number of population in the peak-season; creating a pressure on the infrastructure and tourism facilities, and causing the prices to raise. Wall and Mathieson (1982) add to the said problems the one of the increasing rates of criminality, and the seasonality affecting negatively the quality and traditional way of life (Bigović, 2011). The seasonality results, thus, in the resentment of both the local society and the tourist whose

degree of satisfaction and enjoying the tourism experience gets affected diminishing, consequently, the attraction of the destination. If the concentration of tourists overcomes the environmental absorptive natural and cultural capacity of the tourism attractive areas in the peak-season, this results in many drawbacks that threaten the natural environment, such as the exhaustion of the natural resources because of the excessive use; the overcrowding of natural passages and the problems of their erosion, the trouble of the wild life; as well as pollution and the problems of waste disposal and sewage (Chung, 2009); mainly those resulting from unplanned tourism expansion.

This clearly shows the seriousness of tourism destinations in the endeavour of alleviating the seasonality and avoiding its negative effects. This may be achieved through a series of strategies revealed by many tourism researches, mainly the diversification of the bland of tourism products, the use of preferential prices, market partition, diversification of the tourism generation markets, promotion of alternative products in order to attract tourists in different seasons, as well as the promotion of events and festivals in the off-seasons (Fernandez-Morales & Mayorga-Toledano, 2008).

3. Data and Methodology

The method used in this research is the descriptive analytical. We have used this method in order to make an objective explanation of the conceptual framework of the study variables; to describe the seasonal concentration of international hotel demand, and to analyse its details using the methods of statistical and mathematical treatment on the basis of data relating to the monthly number of international hotel nights during a period of 15 years, from 2000, to 2014, and being of different nationalities (Algerians living abroad, Arabs, and foreigners). In fact, we have data of more than 20 tourist-generating countries we have obtained from the Ministry of Tourism and Craft Industry. In order to achieve the study purposes, we will use two kinds of tools:

3.1 Measuring Tools

As a first step, to understand the characteristics of seasonality in tourism destinations, we need to measure each one of its pattern and the amplitude of seasonal concentration, by using the tools shown in the following table:

Table 1. Seasonality measures

Names	Analytical expression	Note	Uses
Seasonal index	$\bar{y}_t = \sum_{i=1}^{I} y_{t,i}/I$	$\forall$ t=1,2,3……………… ,12	Measurement of seasonal pattern
Gini coefficient	$G = \dfrac{2}{n}\sum_{i=1}^{n}(x_i - y_i)$	$\forall$ i=1,2,3……………….,I	Measurement of seasonal amplitude

Source: De Cantis,S. et al. (2011). Seasonal Pattern and Amplitude: a Logical Framework to Analysis. *Tourism Economics, 17*(3), 659.

3.1.1 Seasonal Index

It expresses the average of seasonal factors specific to each month along the years of the study. It has been used by several researchers to measure the mode of seasonal oscillation and determine the peak-seasons and off-seasons during the year (Lim & McAleer, 2001), on the basis of determining the months having a seasonal index higher or lower than the component of the trend-cycle. These indices often have the average value of 100. The values under or over this one generally show that the factor of seasonality is higher or lower than the component of the trend-cycle (De Cantis et al., 2011).

3.1.2 Gini Coefficient

This coefficient, developed in 1912 by the Italian scientist Gini Corrado (Biljana, 2013), is one of the most important and most current statistical standards in the measurement of unbalanced distribution in different natural and economic phenomena (Black, 2002). Its use in the field of tourism has become very common by many researchers (Fernandez-Morales, 2003; Rossello et al., 2004).

(Lim & McAleer, 2001; Bigović, 2011) as a standard of measuring the level of seasonal concentration of tourism demand, since it is the less influenced by extreme values and less dependent on highest fractile and thus more sensitive to variations outside the peak season than seasonality ratio (Ferna'ndez-Morales & Mayorga-Toledano, 2008). The idea of Gini coefficient is graphically represented in the following figure:
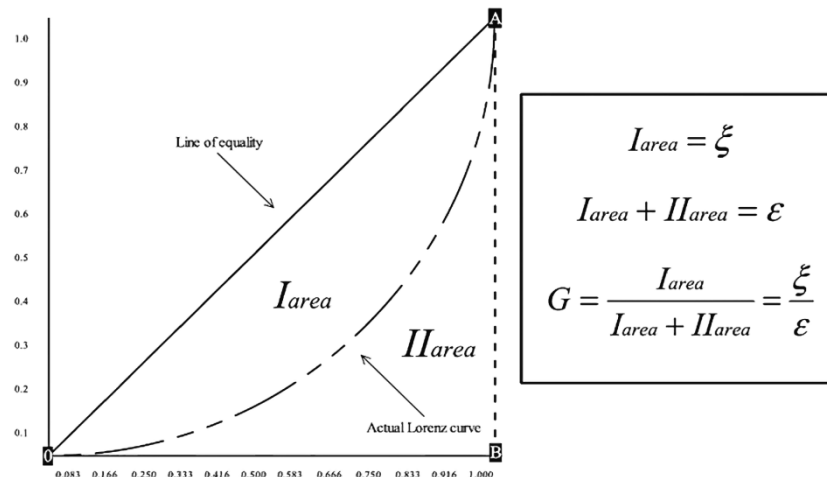
Figure 2. Graphical representation of the Gini coefficient (Bigović, 2011)

Accordingly, the Gini coefficient is equal the surface area situated between the Lorenz curve and the line of equality 45 relating the original point (0, 0) and the point (B, A), and dividing the result on the surface area under 45, the result of this surface area is then multiplyed by 2, because the area of a triangle situated between the equality line and the vertical and horizontal coordinates equals to 0.5. So, the Gini coefficient is limited between the values 0 and 1 (0≤G≤1). It equals 0 when the Lorenz curve is correspondent to the equality line, and the influx of tourists is then the same along the months of the year. This is the ideal situation. The Gini coefficient is, conversely, equal to 01 when the Lorenz curve is correspondent to the horizontal or the vertical lines, and the influx of tourists is then in its worst distribution over the months of the year. So, the bigger G represents bigger inequality in the distribution of tourist influx over the months of the year; and, consequently, a bigger level of seasonal concentration in the tourist destination, and vice-versa (Bigović, 2011).

Statistically, there are many ways to calculate the Gini coefficient. But, in this study it will be calculated according to the standard equation shown in the table above (Rossello et al., 2004). It should be noted that, to the best of our knowledge, there is no theory of the critical limit separating the power and the weakness of the seasonal concentration. According to the study of (Fernandez-Morales & Mayorga-Toledano, 2008; Lundtrop, 2001; Karamustapha & Ulam, 2010) about the measurement of tourism seasonality, the values of Gini are acceptable and ideal if its value is less than 0.20. In fact, it is the critical limit adopted in this study.

3.2 Decomposition Tool

Decomposition is a useful tool to determine the most contributing markets in the total seasonal concentration. The decomposition formula adopted in this study, developed by Yitzaki and Lerman (1985), is presented in the following equation:

$$G = \sum_{m=1}^{m} G_m R_m S_m \tag{1}$$

where:

m: market. For instance, the international hotel demand in Algeria may be analysed by nationality into three markets: Algerians living abroad (m^1), Arabs (m^2) and foreigners (m^3). In this case m=3.

G_m: the annual Gini coefficient of the market (m). It reflects the level of the seasonal concentration of each market.

R_m: called Gini correlation between the monthly international hotel demand of the global market and the monthly international hotel demand of the market (m). It reflects the correlation between the seasonal pattern of each market and the whole market.

S_m: The annual share of the market (m) of the whole international hotel demand market.

What distinguishes these factors is that the factor (S_m) is the easies to change, while (G_m) and (R_m) have a more structural character.

We have chosen this technique because it helps measuring the contribution of each market (C_m) in the total seasonal concentration. This contribution is associated, according to equation (1), to three factors (S_m, R_m, G_m).

So, the study of the seasonal concentration of each market through the calculation of (G_m) is insufficient to analyse the total Gini coefficient, because the market which has a higher (G_m) is probable to decrease the coefficient of seasonal concentration of the whole market if the factor (R_m) is of a minus sign, i.e. it is not situated in the peak-months of the whole market. So, in order to alleviate the seasonality, the planners interested in reducing seasonality have to concentrate their efforts on increasing the shares of the markets having the lowest degree of seasonal concentration (i.e. low G_m) and/or those having an intermediate or a high seasonal concentration, in the condition that they have an opposite correlation with the general seasonal pattern of the destination (i.e. having a low or negative R_m). This contribution may be expressed in the following formula:

$$C_m = G_m R_m S_m / G \tag{2}$$

The decomposition technique permits also to calculate the relative marginal effect of each market (RMEm) on the total seasonal concentration, which expresses the rate of change of the total Gini coefficient resulting from the rate 1% of change of the tourist influx in a given market, maintaining the monthly concentration of the concerned market and of the other markets fixed; where the relative increase in the market (e^m), equally distributed along the year, will diminish or sustain the seasonality concentration in an equal rate of:

$$RME_m = \frac{\partial G / \partial e^m}{G} = S_m \left(\frac{R_m G_m}{G} - 1 \right) \tag{3}$$

Where:

$\partial / \partial e^m$ is the partial derivative *of G for e^m*, and G is the equation of (M_n …… M_1).

The estimation of the rates of marginal effects is a useful tool in planning, marketing and developing strategies of tackling seasonality in the institutions and destinations tourism, because it permits to determine which markets do diminish or enhance the seasonal concentration (Fernandez-Morales, 2003).

4. Analysis and Discussion of the Results

In order to obtain the primary impression about the nature of the monthly international tourist influx in Algeria, we expose the following figure:
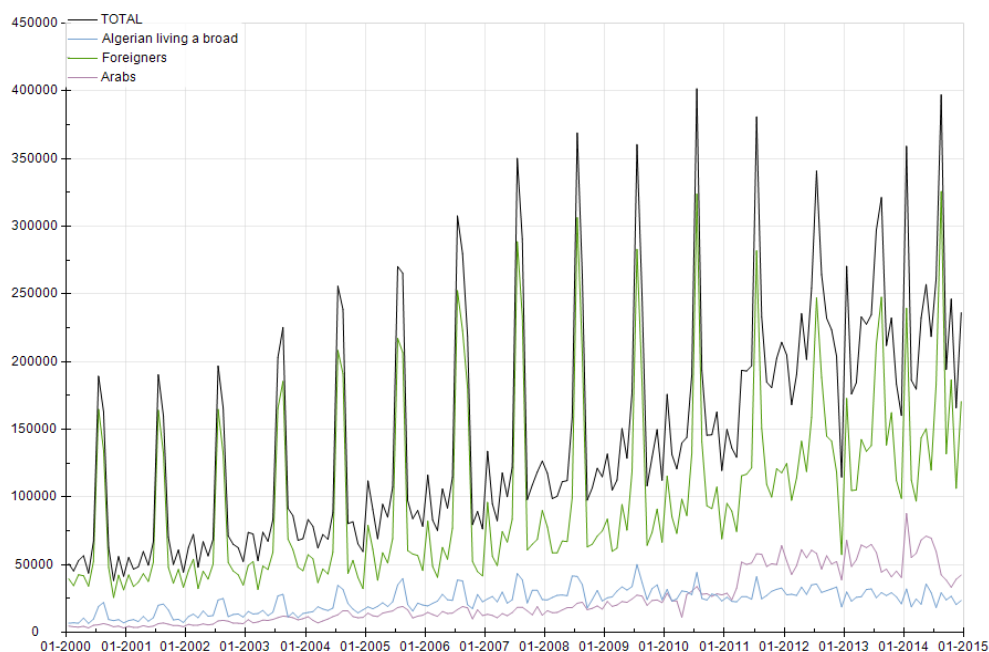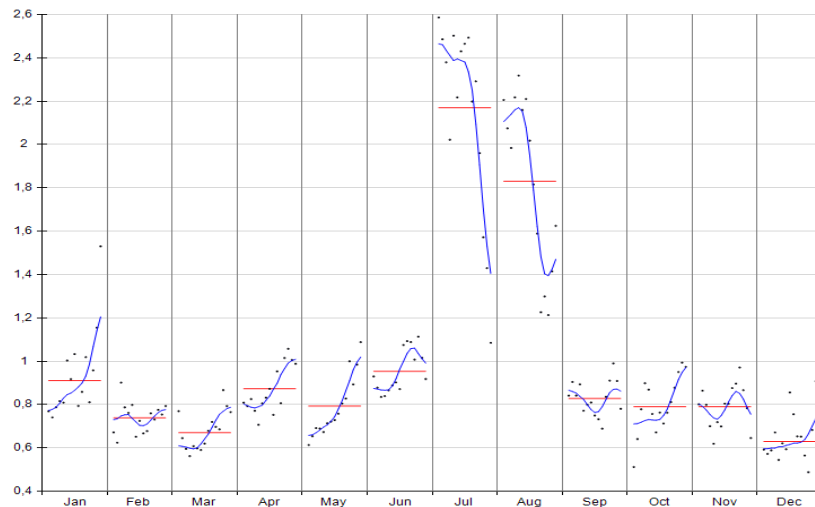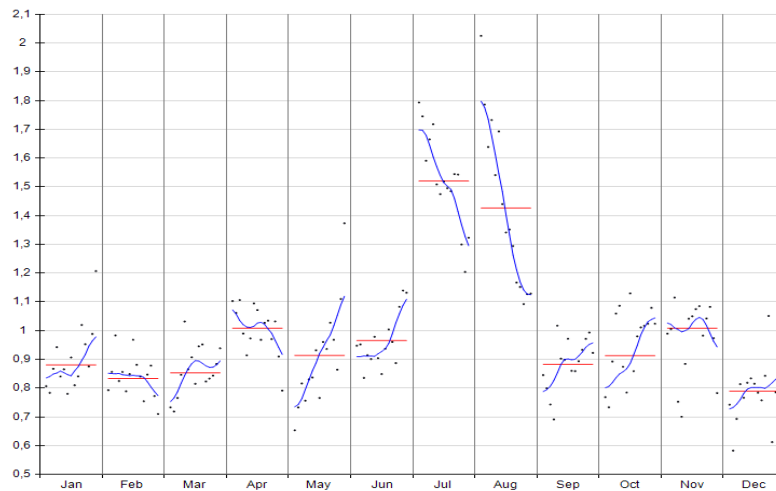

Figure 3. Monthly international hotel demand in Algeria (2000-2014)

The figure shows, along the period from 2000 to 2014, the existence of seasonal variations by nationality in the hotel night of tourists entering the boundaries of Algeria. But, it does not exactly explain the extent and the degree of seasonality. The data in the figure show the existence of peaks in the third quarter of each year. But

these peaks can not be always explained as seasonal. In fact, they may be only the result of cumulative influences of tourism demand inciting factors during the concerned season, such as appropriate climate conditions, personal preferences of the season and so on. Consequently, there should be a differentiation between the recorded peaks and the seasonality. This calls for a further measurement, starting by the display of the results of calculation of seasonality that permit to measure the seasonal pattern, as shown in the following figure:
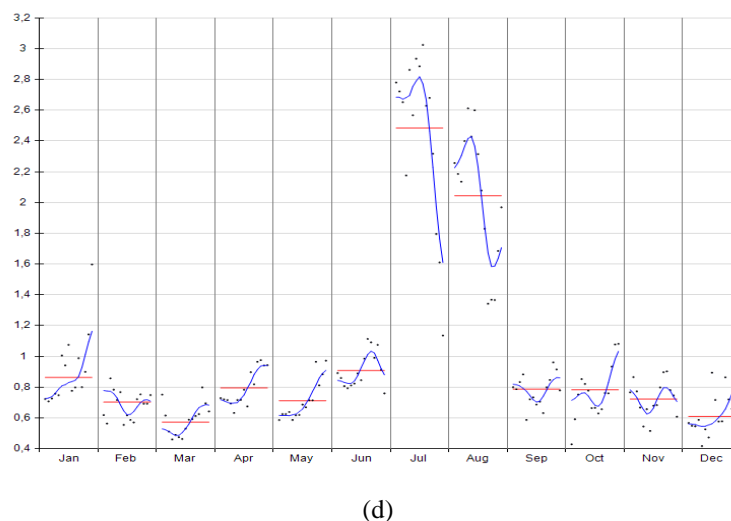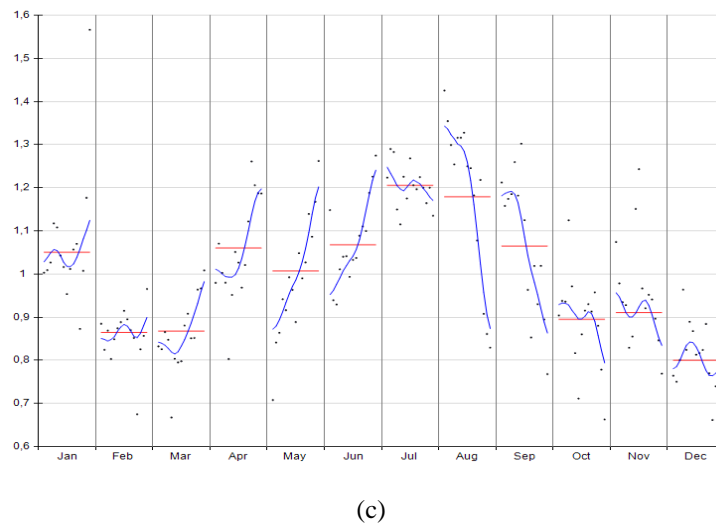

(a)

(b)

(c)

(d)

Figure 4. Seasonal indices of the international hotel demand in Algeria: (a) overall , and by nationalities, Algerian living a broad (b), Arabs (c), Foreigners (d), (2000-2014)

The data shown in the figure confirm that there are monthly fluctuations in the hotel night of tourists entering the boundaries of Algeria in different nationalities. These data indicate the existence of peaks in the third quarter of each year, where the seasonality indices of the overall international hotel demand have values above 100 in July and August. Its higher value is recorded in July where the seasonal component was exceeding twice the trend component (more than 200). So, the international hotel demand in Algeria in the period 2000-2014 is concentrated in July and August of each year, constituting a seasonal one-peak pattern. It is the same pattern of the demand hotel of both Algerian tourists living abroad and foreigners. This essentially results from institutional causes such as leaves and holidays in the tourist-generating country and the seasonal pattern of attraction of the Algerian destination. Conversely, we notice that the behaviour hotel demand of Arab tourists in Algeria is of another pattern. It widens at the medium level, in that the seasonality indices recorded values above 100 from January, April, with a secondary peak in July and August. This may be explained by the geographical proximity since the Maghreb countries are the most tourist generating ones of Arab tourists with 90 % of the volume of Arab tourist influx. This means that the geographical proximity is an attracting factor and a motivation to visit Algeria, even in short leaves and weekends. To that we add the factor of security stability of Algeria mainly in the context of international challenges in some Arab countries, especially in the Maghreb ones.

On the other hand, if we examine the time series of the values of the Gini coefficient, represented in the following figure:
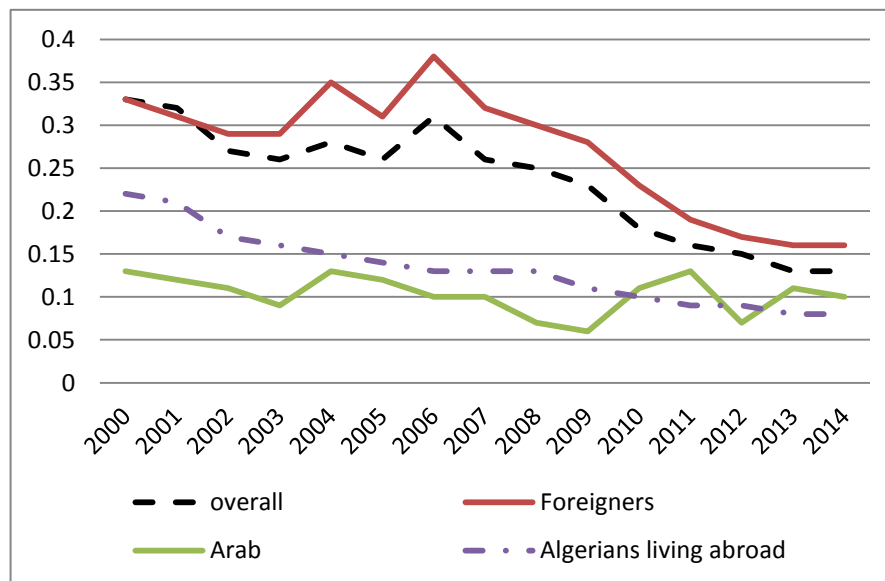
Figure 5. Annual gini coefficients of the international hotel demand in Algeria considered by nationalities

We find that the hotel night of the Algerians living abroad has witnessed, along the period of study an decrease in the seasonal oscillation volume. The average of the Gini coefficient has reached 0.13, which is lower than the critical limit of 0.20 adopted in this study. This shows a relative weakness of seasonal concentration. This indicates that there is a decrease of the seasonal concentration of the hotel nights of Algerians living abroad. Conversely, according to the values of the Gini coefficient which are less than the critical limit over 15 years, the Arab hotel nights is one of the lowest in matters of concentration by nationality. This may be explained by the seasonal length, and thus by the absence of effect of the lower values of Arab hotel nights during the periods of tourism off-season. As for the foreign hotel nights, it has a certain extent of seasonal concentration. The Gini coefficient has been in a noticeable increase during the period 2000-2009, and reached an average of 0.31. Afterwards, it has been gradually decreasing to reach 0.27 which is higher than the critical limit.

All in all, the international hotel demand in Algeria has been of a seasonal concentration during the period 2000-2009, where the Gini coefficient has had values beyond the critical limit. But, since 2010, its values were decreasing to reach 0.13 in 2014. Nonetheless, the international hotel demand continued to have a seasonal concentration, recording an average Gini coefficient of 0.23. The noticeable decrease in the seasonality level–recorded with different nationalities- may be explained by the decrease of the rates of the peak-season (July and August) compared to the annual international hotel demand; since the said rates were representing four times the rates recorded in each of the off-season months (October, February, …). But, the said rates decreased, having a negative growth rate of 55%, to become only twice the rates recorded in each of the off-season months in 2014, (see appendix A for complete proofs). This state of things resulted in the cessation of the effect of decrease of the rates of the off-season months on the degree of seasonal concentration leading to its decrease. This proves that the degree of seasonal concentration is associated with the volume of difference between the rates of monthly hotel nights which is affected by a variety of factors, including the Hegira calendar. In fact, the decrease of the share of the peak-months of the international hotel nights may be attributed to their coincidence, since 2009, with the holy month of Ramadan. These rates are expected to raise after the removal of the effect of the month of Ramadan (see appendix B for complete proofs) and so is the level of seasonality, with the assumption, of course, that the other influencing factors remain what they are.

The measuring tools have permitted to understand the characteristics of the seasonal concentration of international hotel demand in Algeria, in terms of pattern and amplitude, for different nationalities. Nevertheless, the phenomenon needs to be more deeply analysed, so that we can estimate the relative contribution of the different nationalities in the total seasonal concentration and its marginal effects.

The results of decomposition of the Gini coefficient of seasonal concentration are detailed in the following table:

Table 2. Decomposition of the seasonal concentration of the international hotel demand in Algeria by nationalities, (2000-2014)

	(G_m)				(S_m)			(R_m)			$(C_m\%)$			$(RME_m\%)$		
	G	G_{ALA}	G_A	G_F	S_{ALA}	S_A	S_F	R_{ALA}	R_A	R_F	C_{ALA}	C_A	C_F	RME_{ALA}	RME_A	RME_F
2000	0,33	0,22	0,13	0,35	0,06	0,12	0,82	-0,33	0,94	0,99	-1	4	86	-7	-8	5
2001	0,32	0,21	0,12	0,34	0,07	0,13	0,8	-0,22	0,92	0,99	-1	4	84	-8	-9	5
2002	0,27	0,17	0,11	0,29	0,08	0,17	0,75	-0,3	0,96	0,99	-2	7	80	-10	-10	6
2003	0,26	0,16	0,09	0,29	0,09	0,16	0,75	0,66	0,95	0,99	4	5	83	-5	-11	10
2004	0,28	0,15	0,13	0,35	0,11	0,19	0,7	0,57	0,95	0,99	3	8	87	-8	-11	24
2005	0,26	0,14	0,12	0,31	0,12	0,18	0,7	0,82	0,96	0,99	5	8	83	-7	-10	18
2006	0,31	0,13	0,1	0,38	0,1	0,19	0,71	0,75	0,77	0,99	3	5	86	-7	-14	21
2007	0,26	0,13	0,1	0,32	0,1	0,19	0,71	0,71	0,9	0,99	4	7	87	-6	-12	22
2008	0,25	0,13	0,07	0,3	0,11	0,2	0,69	0,8	0,77	0,99	5	4	82	-6	-16	19
2009	0,23	0,11	0,06	0,28	0,14	0,2	0,66	0,85	0,92	0,99	6	5	80	-8	-15	20
2010	0,18	0,1	0,11	0,23	0,15	0,15	0,7	0,5	0,87	0,99	4	8	89	-11	-7	26
2011	0,16	0,09	0,13	0,19	0,23	0,14	0,63	0,63	0,84	0,98	8	10	73	-15	-4	16
2012	0,15	0,09	0,07	0,17	0,24	0,14	0,62	0,7	0,84	0,98	10	5	69	-14	-9	11
2013	0,13	0,08	0,11	0,16	0,23	0,12	0,65	0,33	0,54	0,97	5	5	78	-18	-7	19
2014	0,13	0,08	0,1	0,16	0,2	0,13	0,67	0,32	0,56	0,98	4	6	81	-16	-7	20
Mean	0,23	0,13	0,10	0,35	0,14	0,16	0,70	0,45	0,85	0,99	4	6	82	/	/	/

Note. (G_m): Gini Coefficient; (S_m): Market Share; (R_m): Gini correlation ; $C_m(\%)$: Contribution to overall concentration ; $RME_m(\%)$:Relative Marginal Effect; ALA: Algerians living abroad; A: Arabs; F: Foreigners.

In view of the data in the table above, we find out that the market of the foreigners was responsible for the majority of the seasonal concentration of the international hotel demand in Algeria, with a an average contribution rate (C_F) of 82 %, followed by the market of Arabs hotel nights, with a contribution rate (C_A) of 6 %. As for the rate of contribution (C_{ALA}) of the Algerian living abroad hotel nights, it has been decreasing during the period of study, and has not exceeded an average of 4%.

The high contribution of the foreigners market may be due to its seasonal concentration. In fact, all along the period of study, the values of the Gini coefficient of this market (G_F) have been higher than the Gini coefficients of both the market of Arabs (G_A) and Algerian living abroad (G_{ALA}) (See figure 02), where it was of an average of 0.27. This high contribution of the foreigners market may be due to the second factor (S_F); because we notice that the share of this market in the overall international hotel nights is also high, and represents 70 %. Since there is a strong positive correlation of the Gini coefficient (R_F) all along the period, the seasonal pattern of this market has a positive relationship with seasonal pattern of the overall hotel demand. Consequently, its increased share in the whole market during the peak-season does not result in the decrease of the seasonal concentration of overall international hotel demand. This fact is confirmed by the relative marginal effect of this market (RME_F), which had a positive sign in all the years of the study. This means that any increase in the share of the foreigners hotel nights, as small as it is, in the overall hotel nights during the peak-season, will result in the increase of the seasonal concentration of the international hotel demand of a rate of 20 % according to the estimation of 2014; unlike the relative marginal effect of both the market of Arab hotel demand (RME_A) and that of the Algerian living abroad ones (RME_{ALA}) which was of a minus sign all along the period. This means that any increase in the share of the Arab and Algerian living abroad hotel nights , as small as it is, in the overall hotel nights during the peak-season of both markets, will result in a decrease of the seasonal concentration of the international hotel demand to a rate of 7 % and 16 % respectively, according to the estimations of that same year.

But, what merits to be noticed is that any random attempt to develop the strategies of increase more Arab and Algerian living abroad hotel nights in the peak-season will not be efficient in alleviating the seasonal of international hotel demand. Conversely, this requires more decomposition to distinguish the Arab and Algerian living abroad tourist-generating countries in matters of concentration and contribution in the overall

concentration, as well as in matters of marginal effects. The results of the decomposition are presented in the following table:

Table 3. Decomposition of the seasonal concentration of the international hotel demand in Algeria by countries of origin, 2014

Country of origin	Gini Coefficient (G)	Gini Coefficient (Gm)	Market share (Sm)	Gini correlation (Rm)	Contribution to total concentration (Cm%)	Relative marginal effect (RMEm%)
Arabs country of origin	0,13	0,10	0.13	0,56	6	-7
Tunisia	0.13	0,14	0,113	0,41	4,99	-6,31
Libya	0,13	0,13	0,0062	-0,07	-0,04	-0,66
Morocco	0,13	0,16	0,0056	0,25	0,17	-0,39
Syria	0,13	0,16	0,00395	-0,009	-0,004	-0,40
Egypt	0,13	0,21	0,00169	0,53	0,14	-0,02
Mauritania	0,13	0,16	0,00113	-0,15	-0,02	-0,13
Lebanon	0,13	0,12	0,00113	-0,07	-0,01	-0,12
Jordan	0,13	0,14	0,00056	-0,54	-0,03	-0,09
Saudi Arabia	0,13	0,37	0,00039	0,29	0,03	-0,01
Palestine	0,13	0,29	0,000282	-0,4	-0,03	-0,05
Yemen	0,13	0,38	0,000226	-0,47	-0,03	-0,05
Algerian living abroad country of origin	0.13	0,08	0.20	0,32	4	-16
France	0.13	0,14	0,24	0,7	18,10	-5,91
Spain	0.13	0,11	0,067	-0,17	-0,96	-7,66
Italy	0.13	0,12	0,045	-0,09	-0,37	-4,84
Turkey	0.13	0,1	0,028	-0,52	-1,12	-3,91
Germany	0.13	0,09	0,022	0,53	0,82	-1,41
Portugal	0.13	0,16	0,017	0,26	0,54	-1,14
Britain	0.13	0,07	0,017	0,59	0,53	-1,14
Belgium	0.13	0,11	0,011	0,83	0,78	-0,33
Switzerland	0.13	0,1	0,006	0,11	0,05	-0,51
Netherlands	0.13	0,13	0,003	0,25	0,07	-0,21
Norway	0.13	0,18	0,002	0,54	0,13	-0,04

In view of the data of (C_m), we find out that Tunisia and France, with 5% and 18% respectively, are the most participating markets in the overall seasonal concentration of hotel demand, despite their low Gini coefficient (G_m) values, reaching 0.14 for both markets. In fact, this contribution is due to the relative increase of their chare in the overall hotel demand (S_m) rating 11% and 24% respectively due to the geographical proximity, on the one hand, and the security stability of Algeria in the context of the international challenges in the neighbouring Maghreb countries, on the other hand. Conversely, there are some other important tourist generating countries that participate with low rates in the seasonal concentration of overall hotel demand, including all neighbouring Arab countries such as Libya and Morocco, some European countries such as Spain, Italy and Turkey, and other markets of low contribution (C_m), despite high values of their Gini coefficient, which exceed sometimes the values of Gini coefficient of Tunisian and French like Saudi, Palestinian and Yemenite markets, whose decrease of the share in matters of overall international hotel demand is responsible for the increase of the seasonal concentration degree.

Despite the negative relative marginal effects (RME_m) of all Arab and Algerian living abroad hotel nights-generating countries subject of this research, resulting mainly from the low coefficient of seasonal concentration and/or from the negative or weak correlation between the seasonal pattern of the market and the seasonal pattern of the whole market; they offer good chances to diminish the seasonal concentration of the international hotel demand in Algeria through its promotion in order to increase its share in the peak-seasons .This result is important for the development of effective strategies to tackling seasonal concentration of the international hotel demand in Algeria.

5. Conclusion

Seasonality is a largely recognised problem in many tourism destinations. In this context, we have, in this research paper, presented a brief survey of the patterns of the tourism seasonality, its causes and effects. We have also presented the tools that permit to quantify the seasonal fluctuations in the tourism time series in order to understand its main characteristics in terms of pattern and amplitude, on the one hand, and in terms of decomposition of the seasonal concentration, on the other hand. The decomposition technique used is considered as a useful tool of simulation which helps both the planners and the tourism companies to alleviate the seasonality and its effects. The contribution of a given market (C_m) in the total seasonal concentration depends on three factors: the annual Gini coefficient of the market (G_m); the annual share of the market in the total annual tourist influx (S_m), and the Gini coefficient of correlation (R_m). Each of these factors has to be known in order to develop the strategies susceptible to alleviate the tourism seasonality and to predict its probable results. The decomposition of concentration helps as well in determining the relative marginal effects in a way that offers the chance of targeting the markets which have a negative relative marginal effect (RME_m) in the peak-seasons, and those which have a positive relative marginal effect (RME_m) in the off-seasons; so that the total seasonal concentrations may decrease.

In this study, the results of measurement have revealed that the international hotel demand in Algeria is concentrated in the third quarter of each year, and reaches the peak in July and August, constituting a one-peak seasonal pattern which differs according to nationalities. The results have also revealed that the international hotel demand in Algeria has witnessed, all along the years of the study, an instable seasonal concentration due to the relative effect of the Hegira (Islamic) calendar.

The results of the decomposition have also revealed the existence of an inequality in the contribution of different nationalities in the overall seasonal concentration. In fact, the major part of the seasonal concentration of the international hotel demand in Algeria is due to the foreigners market. As a result of the increase of the Gini coefficient and the positive value and power of the correlation Gini coefficient; the relative marginal effect of this market appeared with a positive sign all along the years of the study, unlike the markets of the Arab and Algerian living abroad which appeared with a negative sign. So, from a point of view of tackling of the seasonality international hotel demand , the different efforts should be concentrated and the strategies developed, mainly the marketing ones, in order to attract the foreigners in the off-season, and to enhance the Arab and Algerian living abroad markets in their peak-seasons, since all generating countries of Arab and Algerian living a broad hotel nights-subject of this study offer–as shown in the results of the decomposition according to hotel demand-by generating countries for the year 2014–good chances to diminish the overall seasonal concentration of international hotel demand through the development of strategies susceptible to enhance it in the peak-seasons because of its negative marginal effects.

It should be noticed that the tackling of the seasonality is a complex problem, mainly if the seasonal behaviour is subject to structural causes and factors that are difficult to change. So, developing a strategy to tackling seasonality needs the interaction of efforts of the different tourism operators in order to resolve a variety of important issues that can be summed up in: the study of the criteria of seasonal travel in the tourist-generating countries, on the one hand, and the attractiveness of the tourism destination outside the season, on the other hand. Therefore, it remains difficult to give an absolute answer about the strategies of tackling of the international hotel demand seasonality in Algeria using only measurement and decomposition. Thus, This study is just a starting point for more research and discussion.

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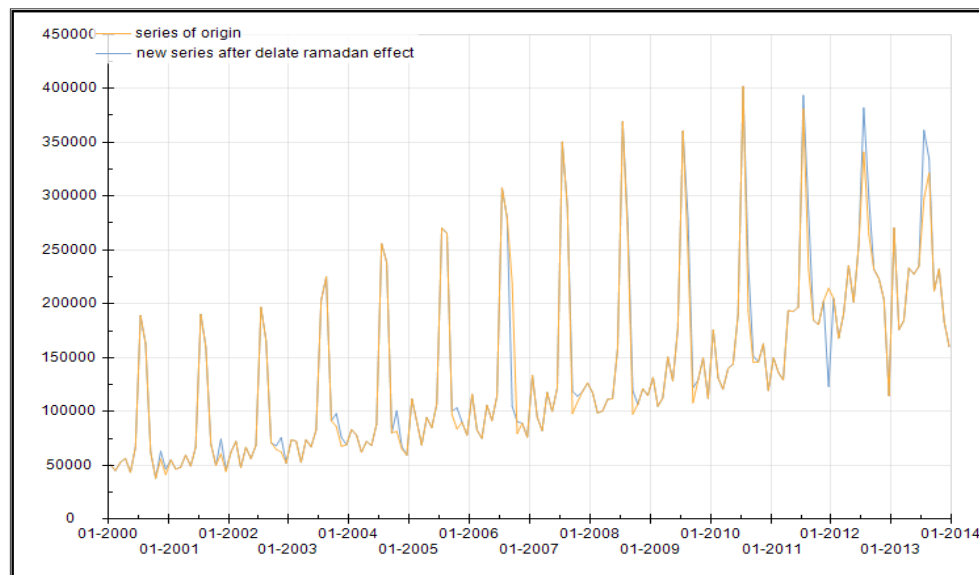World Tourism Organization. (2014). *Tourism highlights* (p. 11).

Appendix A

Monthly rates of the international hotel demand, and Gini coefficients (2000-2014)
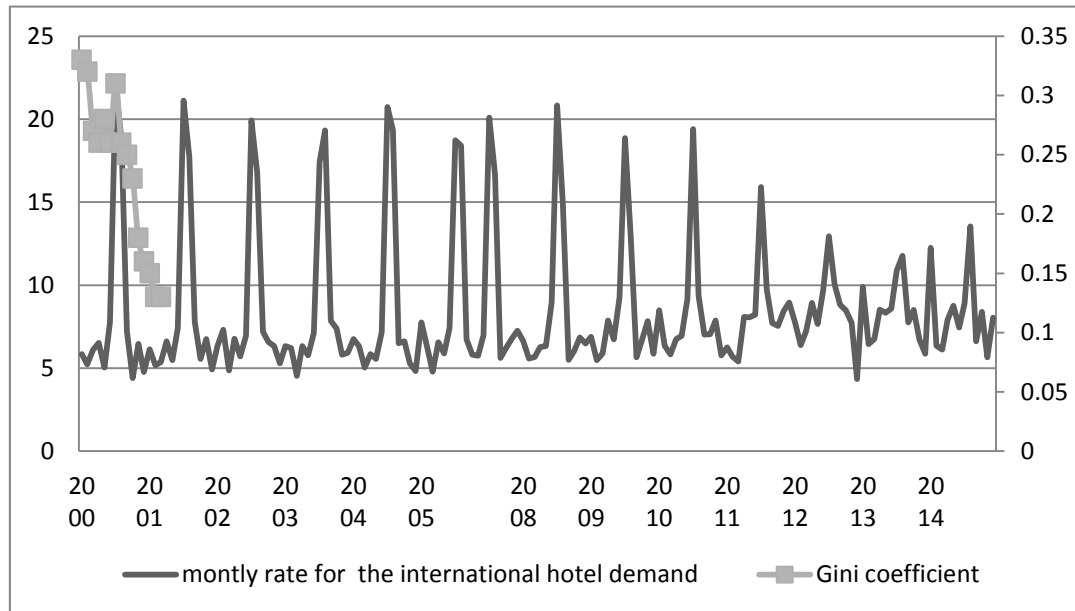
Source: own elaboration.

Appendix B

The new series of international hotel demand after removing the effect of Ramadan

Source: own elaboration using the program Demetra+.

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