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TOURIST SEASONALITY AND THE ROLE OF MARKETS

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Abstract

This paper performs an analysis of tourism seasonality in Spain, typically from a market-side perspective. Three exercises are performed; firstly, seasonality is analysed through monthly concentration indexes and, in particular, the CV; secondly, the role of markets is explored based on an additive decomposition technique; thirdly, its main economic determinants are assessed through a dynamic panel data model. The main results obtained can be summed up in: first, seasonality in Spain has clearly worsened since 2008, coinciding with a strong growth in overall demand; second, three markets generate two thirds of global seasonality, with the pattern of the UK market of particular concern; third, aggregate demand models suggest that prices, exchange rates and especially income levels are significant explanatory factors.

Keywords: seasonality; markets; dynamic panel data models; Spanish tourism

1. Introduction

From tourism management's standpoint the tourism seasonality is seen as a problem of considerable magnitude (McEnniff, 1992). In fact, some authors, such as Baum and Hagen (1999) stated that seasonality is not only a climate question, it is rather more complex as an organisational and marketing issue. Undoubtedly, the seasonality of tourism is a problem of great concern for both public and private agents in tourist destinations, particularly those that receive mass tourism. The main consequences of seasonality can be encapsulated in four aspects (Martín Martín, Jiménez Aguilera and Molina Moreno, 2014). Seasonality can be damaging in economic terms as a result of inefficient use of resources and assets, with periods of saturation, that can affect in service quality and tourist satisfaction endangering to maintain a positive long-term relationship with tourists from the marketing perspective (Jang, 2004), followed by under-use, and problems of corporate profitability. What's more, it is also worth noting its effects on employment through the way it affects incentives for investments in human resources and productivity. Thirdly, mention should be made of the environmental consequences, not only on the atmosphere, whether directly or indirectly, but also in terms of erosion, vegetation, wildlife and waste; and finally, the social consequences need to be highlighted, taking into account its duality and the effects it has on the resident population and their satisfaction levels.

Hence tourist destinations with seasonality problems are designed management and marketing plans in order to combat it. Considering that marketing and management of the destinations must be seen as a tool in order to achieve a complex range of strategic objectives, not only as a sales tool (Buhalis, 2000). To be specific, taking into account the existing literature, we know that there are a limited number of strategies carried out to even out the peaks and troughs. Based on Andriotis (2005) classification these can be grouped in the following one.

The first of them is product diversification through creation of different tourism products for different season. Within this, the most common strategy to combat seasonality is staging events and festivals. This allows to expand the tourist season, increase and diversify the attractive of the destinations and to attract tourists to new locations (Getz, 2008). Some authors, such as Brännäs and Nordström (2006) in a study for Sweden, have found that festivals and special events had a positive net effect, due to average visitors that stayed longer during festival periods.

According to the marketing concept in order to achieve organizational goals one of the essential elements is determining the needs and wants of target markets (Kotler, 1984 and Middleton, 1988). Related to this, the second one is the market segmentation and therefore the identification of different demand motives. This accomplish to coordinate in a more effectively way the supply and demand, considering that tourists who travel in the off season most of the times have been attracted for others reasons different of the beaches (Baum and Hagen, 1999). Spotts and Mahoney (1993) compared tourist to Michigan in the fall with summer ones and they found that both tourist are distinct. They stated that in order to attract visitors in the off-peak season is necessary to establish alternative fall marketing strategies and matching tourism products and services offered with seasonal motivation. Hence the destinations marketers and managers should consider that these new visitors probably need products and facilities very different to the existing ones. Accordingly, it is essential to comprehend visitors' values and preferences to decide how and what experiences and services must be offered (Wang, 2011). Thus, when destinations detecting seasonal patterns of their markets and attract compatible segments can maximize their total yield (O'Brien, 1996). Furthermore, segmenting markets can be competitively advantageous for all agents who participate in the sector (Sausen, Tomczak and Herrmann, 2005 and Smith, 1956).

The third one is to apply differential pricing strategies like price reductions during the off-season. On the one hand, some authors believe that this tool has positive effects, for instance Manning and Power (1984) presents an approach for evaluating the effects of price differentiation and they found that this strategy helped to encourage the tourism market in low season. In some regions, in

order to encourage tourism enterprises to apply this plan, Public State offers incentives to tourism enterprises, for example tax reductions. On the other hand, another group of researchers, such as Baum and Hagen (1999) found that aggressive pricing during off-season could damage the overall reputation of the destination.

The academic literature has devoted considerable attention to researching tourism seasonality from different points of view. In particular, an excellent survey by Koenig-Lewis and Bischoff (2005) establishes the main areas of research, which still leave large gaps that need to be filled. In this respect, six areas stand out: the definition itself, the measurement aspects, the analysis of the causes, the consequences and impacts, the implications for policy and the analysis of consumer behaviour. In this study we are going to explore basically the measurement and its explanatory factors in the case of Spain. Especially, our interest lies in understanding the role of source markets as a tool for making policy recommendations. The further knowledge about the specific role of seasonal patterns of markets of origin could be useful for destination marketers and planners in the development of strategies, given that it would permit to identify in which markets should be focused the efforts for a greater extent. Consequently, this paper aims to provide evidence from which to draw conclusions, linked, for example, with destinations' marketing and management. We have taken the whole country as the field of study for various reasons: firstly, because a large proportion of foreign tourists who visit Spain move around, once they arrive in the country, so it seems reasonable to analyse these flows as a whole. Secondly, as a more practical reason, it should be noted that we only have acceptably complete monthly details of foreign tourists, broken down by source markets, for the country as a whole. This particular analysis will be conducted for the period 2000-2014 using monthly data on foreign tourists from the FRONTUR survey (Institute of Tourism Studies).

On a methodological level, the measurement of seasonality used follows the line of previous studies, based on summary indices and taking months as basic seasonal units (Duro, 2016; Fernandez-Morales, 2003; Fernandez-Morales and Mayorga-Toledano, 2008; Lundtorp, 2001; Martín Martín et al., 2014; Rosselló,

Riera and Sansó, 2004; Tsitouras, 2004; Wanhill, 1980). But, in particular, given its methodological characteristics, we are going to focus on the use of the Coefficient of Variation instead of using the Gini Coefficient, which has been the usual practice in the literature thus far. The main reason for this concerns its properties of neutrality, i.e. the uniform treatment given to months which, in our case, is where our basic observations take place. In relation to the analysis of the role of the different markets, an additive decomposition will be performed on seasonality by sources using Shorrocks' method (1982). To be specific, this role will depend on the specific seasonality (monthly concentration) and weight of the market in question in relation to overall demand. In this sense, there are few empirical applications in terms of additive decompositions in the literature and in most cases they are referred to the Gini coefficient (Fernandez-Morales, 2003; Fernandez-Morales and Mayorga-Toledano, 2008).

Finally, given the existence of measurements of monthly concentration by markets and years for Spain, a panel data model will be employed, with the aim of exploring the relevance of reasonable explanatory factors. In this respect, two elements need to be put forward. Firstly, the list of explanatory factors is basically determined by the standard model of tourism demand and therefore variables such as income and prices occupy a central role (Crouch, 1994a and 1994b). The Introduction of these explanatory variables into the empirical model could help to identify if some responses are useful with the aim of improving seasonality rates, such as price differentiation strategies. Moreover, it permits to observe the impact of the other relevant variables for the destination management for instance the income or exchange rate. Secondly, given the expected formation of habits affected by these variables, a dynamic specification will be employed, leading us to put forward a dynamic panel data model, in this case estimated based on the GIFF-GMM technique (Arellano and Bond, 1991) with seemingly satisfactory results. As far as we know this exercise would be novel in this context. Therefore, the paper seems innovative and beyond the empirical evidence suggested for Spain it proposes a series of methodologies related to the measurement and analysis of seasonality, in most cases underutilized, which may constitute a tool box for future empirical analysis.

The work is organized in the following way: the second section reviews some of the main methodological aspects associated with the measurement of seasonality by markets and the econometric model with which to approach the analysis of explanatory factors. The third section gathers together the main empirical results obtained and the final section contains the main conclusions drawn from this work.

2. Material and methods

Based on Butler's definition (1994), measurements of seasonality would be the same as using inequality measures. In this respect, literature on inequality measurement (Cowell, 1995) provides a methodological reference for this analysis. In particular, the literature on tourist seasonality typically uses the Gini Coefficient as a reference measure, given its suitable characteristics (Lundtorp, 2001; Wanhill, 1980). As explained by Duro (2016), however, this measure is interesting but it is not the only attractive one. Indeed, from certain points of view, other measurements such as the coefficient of variation would be especially valuable. As a case in point, one of the natural features of the Gini Coefficient is to give greater weight to changes that occur in the months situated around the mode of monthly distribution. In this respect, we perhaps don't agree with this rather gratuitous means of weighting. In contrast, the CV is a neutral measurement, i.e. insensitive to the place where the monthly changes occur and hence treats the changes that take place in the different months homogeneously, regardless of their location on the monthly ranking.

Another of the especially attractive properties of summary measurements, or at least some of them, from an analytical point of view, is their capacity for decomposition into parts. In particular, in our case, we are interested in decomposing by sources, given the desire to explore the role of the source markets as contributors towards international global seasonality.

As different authors have already taken pains to demonstrate, this type of decomposition is fairly ambiguous and complicated (Goerlich, 1998). Although methods have been developed to decompose the Gini index, they remain debatable (Fernandez-Morales, 2003; Fernandez-Morales and Mayorga-

Toledano, 2008). Having reached this point, Shorrocks (1982) stated that a valid rule generally applicable to all inequality indices, given the acceptance of certain assumptions, is the natural decomposition of the variance. In particular, if k equals markets, the contribution of each market to the overall monthly concentration would be described by the following formula, which is applicable to all summary indices:

$$C_k = \frac{\text{Var}(M_k) + \sum_{j \neq k} \text{Cov}(M_k, M_j)}{\text{Var}(M)} = \sum_j \text{Cov}(M_k, M_j) = \text{Cov}(M_k, M) \quad (1)$$

Thus the relative weight of each market in terms of overall seasonality (or monthly concentration) would be a result of its own concentration, of the relative weight of the market as part of the overall annual demand, and by its correlation with other markets.

So far this type of decomposition by sources have been used by Duro (2016), Fernandez- Morales (2003) and Fernandez-Morales and Mayorga-Toledano (2008). In the first two cases an additive decomposition by markets was used but referred to Gini. Duro (2016) constitutes the main reference to this paper, although in this case the Shorrocks-decomposition is applied to a selection of Spanish provinces and more restrictive tourist demand indicator (hotel demand).

In addition to the aforementioned exercises of measurement and decomposition, we believe it would be interesting to do an analysis of the determinants of this monthly concentration by markets and by years. In this respect, Economic Theory offers a reasonable reference point from which to approach. As we know, the main determinants in respect of tourism consumption is identified as being the tourists' income and prices (Crouch, 1994a and 1994b; Garín-Muñoz, 2006; Garín-Muñoz, Montero-Martín, 2007; Serra et al., 2014; Witt and Martin, 1987). In the case of seasonality, there are no clear hypotheses about the expected effect, and therefore the empirical analysis would have greater visibility (Rosselló et al., 2004). In any case, and going beyond the two previous variables, it would be reasonable to extend the

equations in order to include other control factors. Specifically, and according to an analysis of the literature, the list of variables selected was as follows:

Firstly, the inclusion in the model of past values of the dependent variable in seasonality would capture the formation of habits and interdependent preferences, due to the lower uncertainty and the transfer of information, and hence the relevance of the inertia factor in the context of the seasonal choice of trip throughout the year (Butler, 1994). The delay of the dependent variable is, in fact, a typical feature of annual demand models (Witt and Martín, 1987; Garín-Muñoz, 2006) and, consequently, it would seem reasonable to extend its use in determining monthly concentration. Indeed, according to Morley (1998) the failure to consider this variable in the models could overestimate the values of the rest.

Secondly, income is potentially a variable not only of interest for determining the trip itself but also, and this is our main interest, for determining specifically when it takes place. In this respect, there is no prior hypothesis on the significance of this indicator. It might be thought, beyond the intrinsic characteristics of each market, that the indicator could be related to the profile of the average visitor and their level of consumption at different times of the year. In particular, markets with profiles that tend towards mid-to-low market segments in the summer months may well exhibit negative income elasticity in respect of monthly concentration. Thus, periods of crisis would have a noticeable effect on these profiles (higher likelihood of unemployment and loss of earnings), which would affect the demand for the central months to a greater degree and, consequently, reduce the concentration. In any case, empirical estimates, beyond their intrinsic interest, offer indirect evidence of this situation. This study takes GDP based on PPP (Purchasing Power Parity) per capita as a proxy indicator of the source markets.

Thirdly, price variables are given preferential attention in the modelling. In this respect, there are various possibilities. In this study, we have taken the prices relative to consumer goods between Spain and the country of origin, which is an option very widely used in the literature (Daniel and Ramos, 2002 or Garín-Muñoz, 2009).

Fourthly, the specification includes the exchange rate as a separate explanatory variable, and hence it is not taken into account jointly with the prices variable for the relevant markets (i.e. USA, UK and Switzerland). Scholars like Rosselló et al., (2004, 2005) or Ledesma et al., (2001) have also used this separated variable in their models. Separating them, going beyond the empirical results, is in response to the possibility that firstly, exchange rates and prices can move in opposite directions and secondly, that exchange rates are a very visible variable to tourists and therefore the effect on demand in response to exchange rate changes might be more intense and diverse than that motivated by relative prices (Stalber et al., 1999).

Finally, oil prices are considered separately, following standard practice in the literature, which is based on the reaction of differential demand to variations in transport costs (Garín-Muñoz, 2006; Ledesma-Rodríguez; Navarro-Ibáñez and Pérez-Rodríguez, 2001), In this case, the ideal scenario would have been to have a complete estimate of these prices, but given the lack of information they have been taken as a proxy, whilst remaining conscious of their limitations.

Therefore the basic equation would be the following, expressed, as is customary, in a double log model to obtain elasticity:

$$\ln C_{k,t} = \alpha + \beta_1 \ln C_{k,t-1} + \beta_2 \ln y_{k,t} + \beta_3 \ln P_{k,t} + \beta_4 \ln e_{k,t} + \beta_5 \ln PO_{k,t} + \varepsilon_{k,t} \quad (2)$$

where $C_{k,t}$ is the monthly concentration of market k in year t ; $C_{k,t-1}$ is the out-of-phase variable; $y_{k,t}$ is the GDP per capita in market k and year t ; $P_{k,t}$ is the ratio of consumer prices between Spain and market k in year t ; $e_{k,t}$ is the average exchange rate against the euro of the currency of market k in year t and $PO_{k,t}$ are the average import prices of oil in market k and year t ,

Given that this is a dynamic model, a panel of fixed or random effects would provide biased and inconsistent estimates, unless the time observations covered long periods, which is not our case (Baltagi, 1995). In this situation, we have chosen to use the GMM difference method (Arellano and Bond, 1991), which also mitigates the problem of the non-seasonality of the series

(differentiation eliminates the trend and get no spurious results) and increases the certainty about regression coefficients and their standard errors. Consequently, the final basic equation would be as follows:

$$\Delta \ln C_{i,t} = \alpha + \beta_1 \Delta \ln C_{i,t-1} + \beta_2 \Delta \ln y_{i,t} + \beta_3 \Delta \ln P_{i,t} + \beta_4 \Delta \ln s_{i,t} + \beta_5 \Delta \ln PO_{i,t} + \Sigma D_t + \Delta \varepsilon_{i,t} \quad (3)$$

In this case, the retarded variable covers two periods or more, which generates consistent estimates. In addition, the validity of the specification will be analysed using the first- and second-order serial correlation test and the Sargan test on over-identifying restrictions. This method has been used, for example, for the analysis of tourism demand in works such as those of Garín-Muñoz (2006) or Garín-Muñoz and Montero-Martín (2007).

As far as we know, the use of this methodology for the empirical analysis of tourism seasonality is new. Thus, we have a vast amount of literature in terms of explaining global demand but not for analysing its time distribution. The nearest reference would be Rosselló et al., (2004), although there are many differences in terms of the particular method and, of course, in the field of study (in this case the Balearic Islands).

Note, nevertheless, that the equation (3) does not include natural or institutional factors (Hadwen et al., 2011). In this respect, two reasons should be mentioned: first, in terms of theory, given that there are other possibilities, we wanted to base ourselves on the main theoretical model that we use for explaining tourism demand. Secondly, in any case, given that what we wish to explain is the different behaviour of markets such as those included in the same destination (e.g. the whole of Spain) and over a relatively short period of time, it is expected that the aforementioned factors have little, or less, explanatory force.

In implementing the model for Spain, ten individual markets were considered (Belgium, France, Germany, Ireland, Italy, Netherlands, Portugal, United Kingdom, United States and Switzerland), given their data available from the dependent and explanatory variables, which nevertheless represent almost 80% of the overall demand for the period of 2000-2014. The total sample

contains 109 observations. The data about explanative variables comes from the OECD.

The demand indicator used in the empirical analysis corresponds to the number of international tourists received across the entire country by month, year and source market between 2000 and 2014. Information concerning this indicator comes from the Institute of Tourism Studies specifically Survey of tourist movements at frontiers (FRONTUR). This indicator gives us access, for example, to data for international demand as a whole and not just what is channelled through regulated accommodation, given the difficulties relating to direct surveys of non-regulated accommodation in Spain and, moreover, with it being a population parameter, it seems to be closer to the pressure such demand exerts on tourism resources and the region.

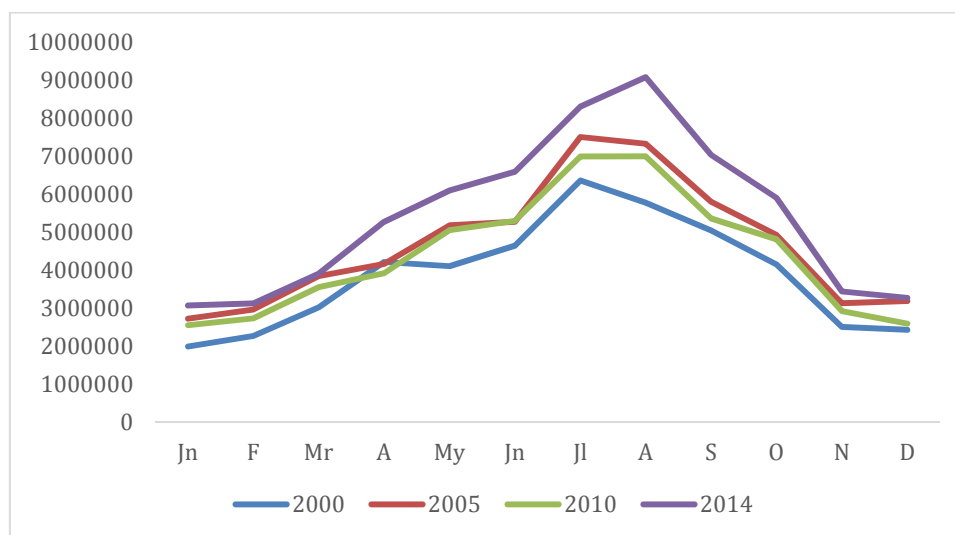
3. Main Results

3.1. Measurement and decomposition

First and foremost, it is worth clarifying the type of monthly distribution of tourism demand in Spain and its approximate evolution. In this respect, Figure 1 shows the distribution of monthly demand for four years selected from the period. Firstly, an upward trend can be seen across the whole distribution, indicative of the global expansion of flows. Secondly, it can be seen that from 2000 to 2005 there was a differential increase in demand in the first three months of the year, a result which would explain the likely fall in overall monthly concentration. In any event, since 2005 there has been barely any variation in demand in these months, which could indicate a possible halt in the positive evolution of this period. Thirdly, and in compensation for the aforementioned halt, demand grew, particularly in months such as May, September and October. Fourthly, there has been a huge increase in demand for the summer months, especially for the month of August (see the progress of 2005 against 2014) which, all else being equal, would have contributed to diminishing concentration. In such circumstances, and faced with a different indicator for the

different months which hinders preliminary assessment, a synthetic measure is required which averages out all these changes.

Figure 1: Monthly distribution of international tourists in Spain, selected years period 2000-2014

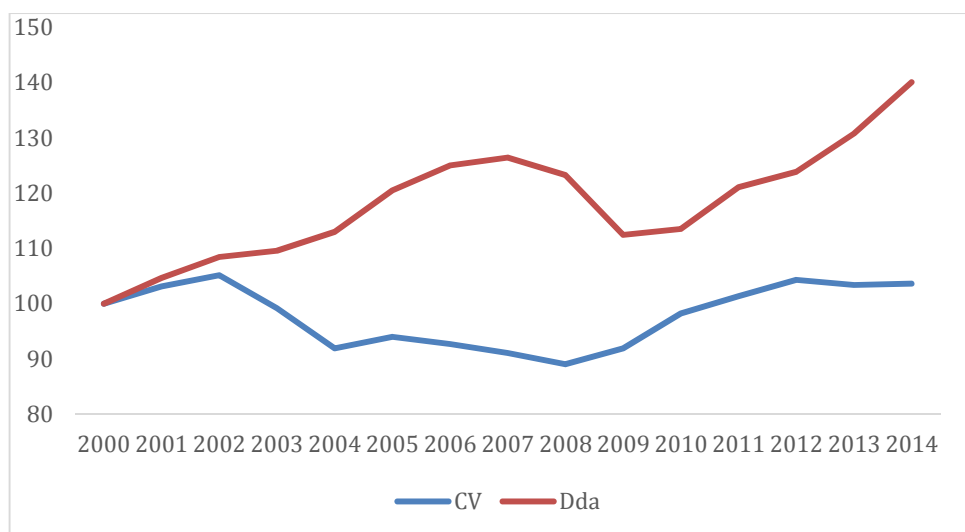


Source: own elaboration from Frontur Survey (Institute of Tourism Studies)

Therefore, we have calculated the monthly concentration of foreign tourists arriving in Spain during the period 2000-2014, using the coefficient of variation as a benchmark measure, given its neutral characteristics. At the same time, Figure 2 shows the evolution of annual global demand, with the aim of obtaining indications of a possible connection between the global tourism cycle (and, if desired, the economic cycle) and the monthly concentration of international demand in Spain. In this respect, the data indicate that the monthly concentration declined up until 2008, after which it began an upward trend. In fact, since 2008 the level of concentration grew by 13%, at the same time as overall demand rallied by a significant 25%. The deterioration in seasonality in recent times, coinciding with the increase in demand, contrasts with the previous pattern. In real terms, for example, between 2002 and 2008, seasonality fell by 15% while demand increased by 14%. Therefore, in recent years, growth has been particularly unbalanced at a time when the increase in global demand has reached nearly 13 million tourists. With this in mind, and

considering the evidence, concern in Spain about this phenomenon would appear logical¹.

Figure 2: Tourist Seasonality and Global demand in Spain, 2000-2014



Note: series are indexes according to the initial value (2000=100)

Source: own elaboration from Frontur Survey (Institute of Tourism Studies)

In Table 1, results are given for monthly concentrations during selected years from the period including available details on source markets. In Figure 3, the annual development is shown separated out by principal markets, being the United Kingdom (23% of overall demand in 2014), France (16%), Germany (16%), Italy (6%), the Netherlands (4%) and Belgium (3%). Note, then, that the three leading markets account for 55% of the total number of tourists for the year². And in Figure 4 the same exercise is repeated for the other markets.

Note, therefore, that France (one of the main source markets) also appears to be one of the most concentrated, along with the United Kingdom, Ireland and the rest of Europe. Amongst countries with less concentration are the Nordic countries, the rest of the Americas and the rest of the world. In any case, in

¹ Throughout the whole section, the coefficient of variation will be used as a benchmark indicator to measure monthly concentration. In any case, using the Gini coefficient as an alternative indicator does not yield qualitatively different results in global terms. Any results required are available by direct request to the authors.

² Bilateral contrast were carried out on the equality of means (very approximate given the short time series available) in order to test the hypothesis that the seasonality of these main source markets were the same and the results indicated a general rejection of this hypothesis, except in the cases of France and Belgium, on the one hand, and Italy and the Netherlands on the other. Calculations can be provided by the authors in response to any requests.

Figures 2 and 3 we can clearly detail the annual development of all of them. Firstly, and concentrating on the largest markets, we should highlight the progress of the French market, that showed a significant reduction in its monthly concentration since 2000 (a fall of 20% in the CV), which is good news. On the other hand, first a declining trajectory followed by an increase can be seen in markets such as the Dutch, Belgian, German, Italian and British. In the British case, the increase has been significant and continuous since 2005. In particular, its CV has increased some 36% from that year, representing the biggest increase of all the markets. In the case of the German market, which is one of the most stable, there has also been growth in recent years. With the Italian market, there was a severe decline up until 2009, coinciding with the crisis, whereupon it went back to continuous growth. In the case of Belgium, the initial downward trend is pronounced with a 32% in the CV until 2010, and with the Dutch the rise since 2009 gives way to a reduction from 2011. Secondly, with respect to the remaining markets (See Figure 3), in the case of Ireland and Portugal the fall and rise pattern is repeated; quite a stable pattern can be identified in the case of Switzerland and for the rest of Europe and the USA there has been growth since 2004.

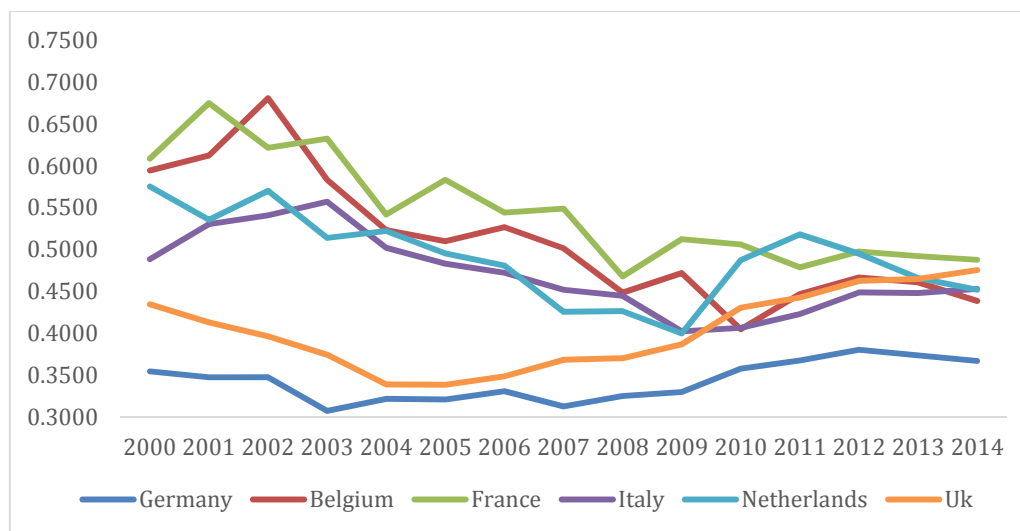
In summary, therefore, we observe some markets with a declining trajectory until the middle of the last decade and then the advent of the crisis and subsequent growth, which in some cases started earlier than others. At the risk of over-generalization, the initial declines may be associated with the global economic boom, changes in travelling patterns and the rise of low-cost airlines and secondary airports. Conversely, the recent reductions might be more related to the effects of the crisis on tourism consumption, which may act to reduce demand outside basic months and therefore outside the summer period. In any case, we will have a more precise insight into the effect of income when we investigate the results of the econometric model.

Table 1: Monthly concentration by markets in Spain, selected years over 2000-2014

	2000	2005	2010	2014
Belgium	0,5944	0,5099	0,4047	0,4386
France	0,6088	0,5833	0,506	0,4878
Germany	0,3544	0,3206	0,3576	0,3669
Ireland		0,4507	0,4905	0,5081
Italy	0,4885	0,4831	0,4064	0,4529
Netherlands	0,5754	0,4953	0,4874	0,4519
Nordic countries		0,1539	0,2189	0,2118
Portugal	0,4228	0,3186	0,289	0,4012
Switzerland	0,416	0,4097	0,4194	0,4167
United Kingdom	0,4345	0,3382	0,4304	0,4754
United States	0,3245	0,3356	0,3743	0,4345
Rest America	0,315	0,1811	0,3618	0,2938
Rest Europe	0,2272	0,3202	0,3374	0,4829
Rest World	0,4002	0,3739	0,3613	0,2971
Total	0,3724	0,3501	0,3658	0,3858

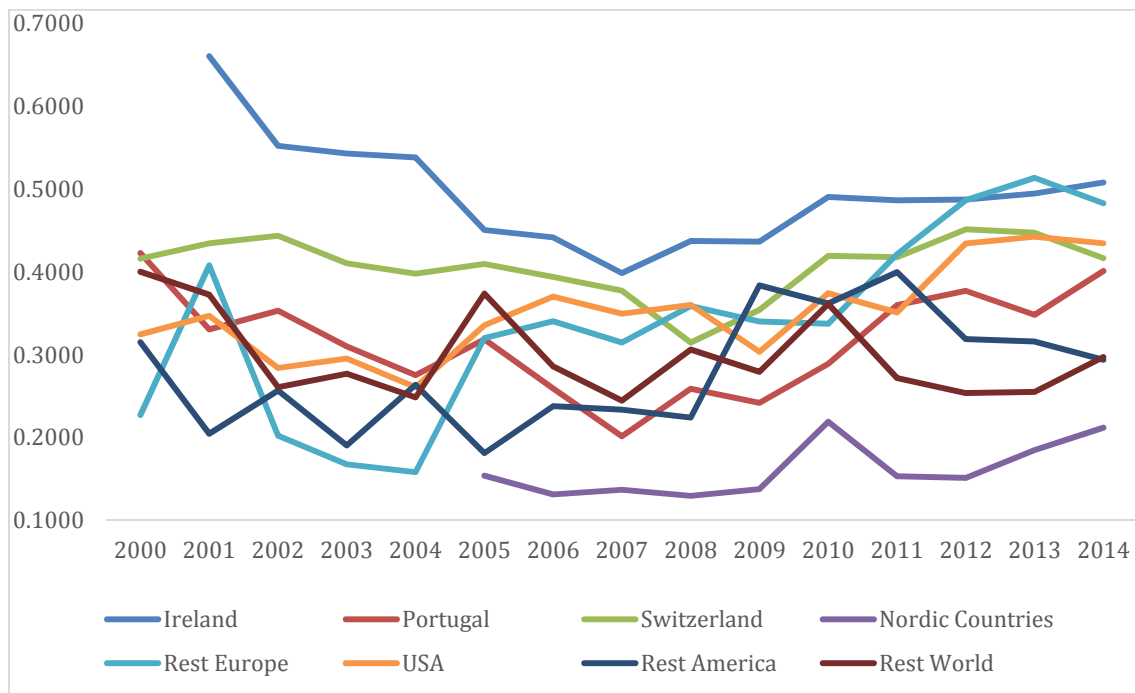
Source: own elaboration from Frontur Survey (Institute of Tourism Studies)

Figure 3: Monthly concentration in large individual markets, 2000-2014



Source: own elaboration from Frontur Survey (Institute of Tourism Studies)

Figure 4: Monthly concentration in the rest of markets, 2000-2014



Source: own elaboration from Frontur Survey (Institute of Tourism Studies)

In any case, having got to this point, it is worth looking into the specific importance of each source market in terms of monthly concentrations for the country overall. In this respect, it is reasonable to suggest that this contribution depends, basically, on two parameters: the weight of the market as part of overall demand and its individual level of monthly concentration. Specifically, what we are asking for is an additive decomposition rule to apply to concentration. That being the case, one possibility is to use Shorrocks' rule (1982), which establishes that the aforementioned weight can be approximated through the weight of its individual variance and factorial covariations from the overall variance (natural law of variance). Duro (2016), for example, uses this decomposition in the case of provincial Spain. Table 2 shows these relative contributions for the sub-period 2005-2014, which is where we have observations for all of the source markets. In any case, this period allows us to clarify the role of the distinctive markets in a period dominated generally by the reduction and subsequent growth in monthly concentration as previously seen.

In this respect, the results indicate some interesting points:

Firstly, three markets contribute to explaining two-thirds of the monthly concentration of international tourism demand in Spain. The market that makes the greatest contribution is the United Kingdom, with 28% of the total, followed by France with almost 19% and Germany with 15%. Note that the weight of the British market stems not only from its size in the annual global demand but also for its relatively high concentration, given that its proportion of global demand is lower than its synthetic concentration of 23%. The explanatory weight of the French market is also greater than what corresponds to it due to the weight of demand, which is also explained by its high comparative seasonality. In any case, this preponderance of the three markets points, to a large extent, towards having to make efforts to mitigate the monthly concentration of foreign demand in the country.

Secondly, in relation to the above markets it is worth highlighting, in particular, the reduction in the relative contribution of the French market which went from 25% in 2005 to 19% of the total monthly concentration in 2014. This reduction is essentially due to the drop in its individual concentration mentioned earlier. Obviously, given the success of this evolution and its high relative explanatory weight, it would seem important that this market should be a focus of particular attention in tourism policies.

Thirdly, the evolution in the weight of the British market is particularly worrying due to the fact that its relative contribution has even slightly increased from 27% to 28%, spurred on by its growing concentration, as its weight within the annual overall demand has dropped considerably, from 29% to 23%. In this respect, something has either not been done or not been done properly to combat the seasonal concentration of this market over these years. Indeed, the combination of decreasing overall demand and growing concentration reveals that, to a large extent, tourists who used to travel in low season months are no longer coming, which possibly indicates a decline in the average profile of these visitors. Whatever the circumstances, it should be a priority in the case of this market not only to increase annual numbers but also to clearly mitigate its seasonal concentration. For this reason, it is necessary the co-ordination and co-operation across public and private sector for strengthen the implementation of the policies aimed at this market, such as promotional strategies in order to

encourage the travels during the year and marketing of attractive packages for low and shoulder season.

Fourthly, a special mention must be made of the increase in the global tourist concentration in Spain associated with markets from the rest of Europe, which in this period corresponds essentially to the Russian market. The evolution of its relative contribution to the concentration has led to a doubling of its weight, from 4.3% in 2000 to 8.5% in 2014. In this growing relative participation, in addition to a growing individual concentration, it is necessary to highlight the increase in its relative weight within overall demand. Therefore, despite the fact that it may seem a good idea to boost these markets, the point is that they further exacerbate seasonal imbalance.

Finally, the results for northern European countries indicate that their contribution to the concentration is not only very small, especially when compared to their weight in the overall annual demand, but that it is even negative in the first years of the analysis. Note that this behaviour is due to their small individual monthly concentration and the compensatory nature of monthly demand compared to the other markets. Consequently, these markets would be good candidates for the fostering of annual demand given their more balanced nature. In such a way, intensifying promotional campaigns in these countries, could improve tourism seasonality rates as a whole in this destination.

Table 2: Decomposing Seasonality by markets in Spain, 2005-2014

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Belgium	4,50% (3.3%)	4,30% (3.1%)	4,00% (2.9%)	3,50% (2.9%)	4,00% (3.1%)	3,20% (3.1%)	3,20% (3.1%)	3,20% (3.0%)	3,40% (3.1%)	3,50% (3.4%)
Germany	15,10% (17.7%)	15,70% (17.5%)	15,00% (17.2%)	16,30% (17.6%)	15,60% (17.1%)	15,30% (16.7%)	14,90% (16.0%)	15,00% (16.2%)	15,00% (16.2%)	14,70% (16.0%)
Ireland	2,90% (2.4%)	3,10% (2.6%)	3,10% (2.8%)	3,70% (2.9%)	3,50% (2.8%)	2,90% (2.2%)	2,80% (2.3%)	2,40% (2.1%)	2,50% (2.1%)	2,40% (2.0%)
Italy	6,70% (5.3%)	6,70% (5.8%)	7,20% (6.2%)	6,50% (5.9%)	6,30% (6.1%)	6,50% (6.6%)	6,90% (6.7%)	6,50% (6.2%)	5,70% (5.3%)	6,20% (5.7%)
Netherlands	5,80% (4.4%)	5,60% (4.4%)	5,10% (4.3%)	5,10% (4.3%)	4,50% (4.0%)	5,70% (4.3%)	6,60% (4.9%)	5,40% (4.5%)	4,90% (4.3%)	4,60% (4.3%)
Nordic countries	-0,60% (5.1%)	-0,20% (5.3%)	0,10% (5.9%)	0,50% (6.3%)	1,00% (6.4%)	1,70% (6.8%)	0,50% (6.9%)	0,90% (7.3%)	1,80% (8.0%)	1,70% (7.8%)
France	24,70% (15.9%)	22,90% (15.7%)	22,90% (15.3%)	18,70% (14.2%)	21,20% (15.2%)	19,60% (15.4%)	17,80% (14.9%)	18,00% (15.5%)	17,80% (15.7%)	18,90% (16.3%)
Portugal	3,00% (3.6%)	2,40% (3.8%)	2,10% (4.1%)	2,50% (3.9%)	2,60% (4.0%)	2,70% (3.6%)	2,90% (3.3%)	2,90% (3.2%)	2,30% (2.8%)	2,80% (2.9%)
Switzerland	2,10% (2.1%)	2,50% (2.4%)	2,50% (2.3%)	1,90% (2.2%)	2,10% (2.2%)	2,40% (2.2%)	2,50% (2.4%)	2,70% (2.5%)	2,70% (2.5%)	2,40% (2.5%)
United Kingdom	26,60% (28.8%)	27,40% (27.9%)	29,30% (27.8%)	30,30% (27.6%)	28,10% (25.5%)	27,30% (23.6%)	27,90% (24.2%)	27,80% (23.7%)	28,10% (23.6%)	27,90% (23.1%)
United States	1,20% (1.6%)	1,50% (1.6%)	1,60% (1.8%)	1,90% (2.0%)	1,60% (2.0%)	1,50% (2.2%)	1,50% (2.0%)	2,10% (2.2%)	1,70% (2.0%)	1,90% (1.9%)
Rest Am	1,10% (2.4%)	1,60% (2.5%)	1,30% (2.2%)	1,30% (2.2%)	2,80% (2.8%)	2,60% (2.8%)	3,00% (3.1%)	2,40% (3.3%)	2,10% (3.1%)	1,80% (2.9%)
Rest Eur	4,30% (4.9%)	4,80% (5.1%)	4,20% (4.8%)	6,00% (5.8%)	5,60% (6.0%)	6,10% (7.1%)	7,20% (6.6%)	8,40% (6.9%)	9,60% (7.4%)	8,50% (7.0%)
Rest W	2,50% (2.7%)	1,70% (2.3%)	1,60% (2.4%)	1,70% (2.2%)	1,40% (2.7%)	2,60% (3.4%)	2,20% (3.3%)	2,10% (3.7%)	2,20% (3.9%)	2,70% (4.3%)

Note: Relative weights, in terms of yearly global demand, in brackets. Source: own elaboration from Frontur Survey (Institute of Tourism Studies)

3.2. Searching for the empirical determinants

Next, taking into account the sample data at our disposal, a model of the annual tourism seasonality in Spain has been produced, measured using the monthly inequality of foreign tourists and the coefficient of variation, based on the model (3) in the previous section. The estimate was made using the Stata programme and a dynamic model similar to the GMM-DIFF. Therefore, the model allows us to combat some of the main estimated biases characteristic of dynamic

specifications, as well as obtaining short- and long-term elasticities³. Table 3 shows the main results obtained. The model is highly significant and the tests of the diagnosis are positive, according to the autocorrelation coefficients of the Sargan Test. In any case, the number of observations is not very high and therefore the results should be interpreted with caution enough, being interesting to complete them later when more information available⁴. Based on the results, the following points of interest can be noted:

Firstly, the past typically has a significant influence on present-day seasonality. Indeed, based on the estimates obtained, for every 1% increase in the seasonality of the previous year, the seasonality of the present year would rise by an average of almost 0.5%. This is not 1%, but it does indicate a significant inertia in the short-term evolution of seasonality (Lanquar, 2001).

Secondly, prices are significant. The results indicate that a relative increase in prices would contribute, all other things being equal, to reducing seasonality (result also found in Rosselló et al, 2004 for Balearic Islands). This result indicates that differential inflation would move travel outside the months of highest demand. The strategy of high prices could thus seem advisable in this context, although obviously it would be conditional upon its effects on overall demand, which typically are negative (Garín-Muñoz, 2006). Thus, the price increase may temporarily redistribute flows, which can be positive in our context, but also might reduce the annual global demand, which in turn would depend on the global price-elasticity and the particular behaviour.

Thirdly, the income elasticity of monthly concentration is high and negative. Indeed, this coefficient is the largest of all those analysed: 1.4 in the short-term and 2.6 in the long-term. Consequently, the economic growth of the source markets would be associated, all other things being equal, with reductions in the monthly concentration and, therefore, greater demand in non-high season months. Thus, demand in non-summer months would be regarded as a luxury good. Consequently, an increase in income in the more important economies

³ The long-term elasticities were calculated based on the assumption of long-term balance ($\ln CV_{i,t} = \ln CV_{i,t-1}$) and, therefore, are the result of dividing each of the short-term coefficients by $(1 - \beta_1)$.

⁴ Nevertheless, other papers like Garín-Muñoz (2006, 2009) have used a similar sample with a similar methodology but in that case implemented for explaining global yearly tourist demand.

would not only be positive in terms of annual demand but also in terms of its seasonal distribution. However, by the same token, any crises would worsen everything. In the same way, a crisis not only reduces the overall level of tourists by market but also concentrates them more throughout the year. Crises tend to withdraw tourists from the non-high season months, thus contributing to increasing the weight in summer months in Spain. In terms of policy, this result would suggest that in recessive markets or economies, or those with macroeconomic weaknesses, it is necessary to step up the introduction of anticipatory policies to increase demand in months with less activity. Furthermore, given that markets can experience different cycles, it would be interesting to diversify not only in terms of the overall annual demand (Garín-Muñoz, 2006) but also in terms of its monthly distribution, given our evidence.

Fourthly, the exchange rate, as an explanatory differential variable, seems to be important. The results point to the fact that a rise in the value of foreign currency increases the seasonal concentration in the markets for which this is important. This finding could indicate that exchange-rate fuelled improvements in the purchasing power of important foreign markets, such as the British market, gives rise to tourists who would not have visited Spain under other circumstances, and who take their holidays in the months of greatest demand. Thus, and linked to the previous result about the income-concentration link, we can initially state that changes in currency values encourage, above all, a visitor profile with low-to-medium income profile, who provide the main demand in high season months.

Finally, the cost of transportation is a significant factor although to a very limited extent⁵.

⁵ The results of the estimations using the Gini coefficient as an alternative measure of seasonality do not differ significantly. The results are available on request from the authors.

Table 3: Dynamic Model Results, 2000-2014

Variable	Coeff.		Rob. Std. Err.
Ln $C_{i,t-1}$	0,46	***	0,08
Ln P	-1,02	**	0,49
Ln Y	-1,43	**	0,56
Ln E	0,38	***	0,09
Ln PO	0,14	***	0,05
Cons	13,86	**	5,80
<i>Autocorrelation</i>			
m_1	-2,451		
m_2	1,172		
<i>Sargan Test</i>	50,082		
<i>Wald Test</i>	134.65		
<i>Obs.</i>	109		
<i>Long term param</i>			
Ln P	-1,88		
Ln Y	-2,64		
Ln E	0,71		
Ln PO	0,25		

Note: Dependent variable: Logarithm of C.V. of monthly tourist *denotes a significance level of 10 %, ** of 5 % and *** of 1 %

4. Concluding Remarks

Seasonality is an imbalance in the tourism sector that is crucially important in the case of consolidated destinations. Failure to correct this threatens the very growth of the sector and the destination brand itself, taking into account that the image is the most relevant criterion for the selection of a destination and in particular, the sustainability of its local resources which is the most prominent feature. Understanding seasonal patterns is fundamental for tourism enterprises and destinations due to its impact in tourism consumption and production (Cuccia and Rizzo, 2011). Therefore, it is essential that destinations use strategic management and marketing to optimize seasonality impact and

achieve to even out the peaks and troughs. When designing strategies for tackling seasonality, it is necessary then to measure, evaluate and understand the factors behind this phenomenon, recognize seasonal patterns of their markets and attracting appropriate target market segments in each one of the seasons. This study has focused on exploring in a quantitative way the evolution of this imbalance for one of the biggest international tourist destinations in the world – Spain – during the period of 2000-2014. Thus, one of our main objectives is to provide data analysis and empirical results as a reasonable way to guide policies. Essentially, and in line with the areas of research mentioned in the excellent survey by Koenig-Lewis and Bischoff (2005), the approach used focuses on making an empirical measurement to explain tourism seasonality based on the information associated with the main source markets. This measurement was made, following the definition by Butler (1994), by means of summary indices and, in particular, the coefficient of variation. The use of this measure contrasts with the more general practice in the literature of using the Gini coefficient (Fernandez-Morales, 2003; Fernandez-Morales and Mayorga-Toledano, 2008; Lundtorp, 2001; Martín Martín et. al, 2014; Wanhill, 1980). The main reason for this difference is that the coefficient of variation is neutral in the treatment applied to the different months of the distribution, in contrast, for example, to the Gini coefficient which gives greater weight to the months located around the mode. Whatever the case, various tests undertaken indicate the absence, in most cases, of major differences in the results. The measurement has, on the other hand, become specific to source markets which, for example, motivated the implementation of an additive decomposition technique to quantitatively clarify the role of these markets in Spanish tourist seasonality. Finally, by having data per market and year, a dynamic panel data model has been estimated using a fairly new method in this context, with the aim of exploring the main explanatory factors in greater depth, taking as a reference the standard functions of tourism demand. Nevertheless, the paper, beyond the empirical contribution associated with the Spanish case, highlights the analytical possibilities associated with these methodologies for the measurement and analysis of tourism seasonality, little used until now, and the policy implications potentially derivable.

In light of the results obtained, some implications for marketing strategies and tourism policy are suggested. The main points of interest can be summarized as follows:

First, the monthly concentration of tourism demand in Spain, despite the drop experienced up to 2008, clearly grew since then, coinciding with a phase of high growth in international demand. Consequently, recent years show an unbalanced growth and highlight the need to evaluate this phenomenon and correct it by means of the appropriate policies.

Second, the evidence suggests that two-thirds of this concentration can be attributed to three markets; notably the United Kingdom with 28% of the total; France with almost 19%, and Germany with 15%. It can be deduced from this weighting that there is a need to focus attention on these three markets, preferentially, in order to pursue a significant reduction in concentration in Spain.

Third, and in relation to the above-mentioned markets, there was a notable reduction in the contribution of the French market which essentially corresponds to the drop in its individual concentration. Given this progress, it would seem important that this market should continue to be the focus of particular attention in tourism policies, which is facilitated by its proximity. In evident contrast, the evolution of the role of the British market is particularly negative, insofar as its relative contribution has actually slightly increased, spurred on by its growing concentration. In this respect, the combination of decreasing overall demand and growing concentration reveals that, to a large extent, tourists that used to visit in non-summer months are no longer coming. Whatever the case, the priority in this market should be to apply a comprehensive strategy to reduce concentration (and also possibly increasing demand) and, consequently, to increase the differential in the demand for quieter months. The destination could achieve it through promotional strategies during the year and attractive packages marketing actions outside the high season.

Fourth, the econometric models used reveal that the past has a significant impact on current seasonality. In any case, and although inertia is an important factor, there is scope for promoting significant short-term changes in seasonality levels.

Fifth, price variations are a significant factor, and in particular income. Effectively, in this respect, economic growth is, to a great extent, associated with a reduction in concentration while times of crisis increase it. Therefore, economic crises do not just reduce the level of annual demand but they also increase seasonal concentration. In policy terms, this result indicates that for markets in recession or with low growth, it is necessary to put anticipatory policies in place to increase demand outside summer months. Additionally, and given the possible divergences in economic cycles, it would seem reasonable to act to diversify markets. A contribution of this paper is that such diversification is not only positive in terms of stabilizing demand but also in terms of its monthly distribution.

Finally, the exchange rate has a significant role in the variations in seasonality by market. The results indicate that a rise in the value of foreign currency increases seasonality. This finding, combined with other, could indicate that currency fluctuations encourage, above all, demand associated with visitors whose spending is low to medium and who typically want to travel in the summer months. In fact this result, combined with the problems for reducing seasonality in the British market, would reasonably encourage policies focused on a higher-income profile in this case.

It therefore appears that a great deal needs to be done in terms of combating seasonality in countries such as Spain. The recent increase in seasonality, the unsolved issues in markets such as the British one, for example, and the partial evidence of the low profile of the demand and its effect on concentration all drive the need to seriously consider correction strategies, not only to correct the negative externalities that concentrated growth generates but also to safeguard sustainable growth in an economy such as Spain's, where the tourism sector accounts for practically 11% of the overall GDP (National Institute of Statistics).

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