

# Universidad de Huelva

**Departamento de Economía**



## **El ciclo económico y la actividad turística**

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presentada por:**

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# El ciclo económico y la actividad turística

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**A Pedro y Martín**



## **PREFACIO**

La presente tesis trata de investigar la relación existente entre el ciclo económico y la actividad turística. El inicio de esta contribución nace con el comienzo de mis estudios de posgrado en la Universidad de León justo al terminar mi grado en Administración y Dirección de Empresas.

El germen de todo nace, como ya he comentado con la realización del master en XXXX, donde encuentro la inquietud y curiosidad necesaria para profundizar en los estudios y decidirme a realizar la presente tesis.

Ha sido un camino de casi diez años, donde han convivido momentos buenos y malos, pero donde, sin ningún lugar a dudas, el balance es totalmente positivo y que no habría podido finalizar sin la ayuda de mis dos directores, Mónica Carmona y Antonio A. Golpe que han estado todo el tiempo animándome y ayudándome en todo lo necesario.

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## **PART I: INTRODUCTION AND OUTLINE**



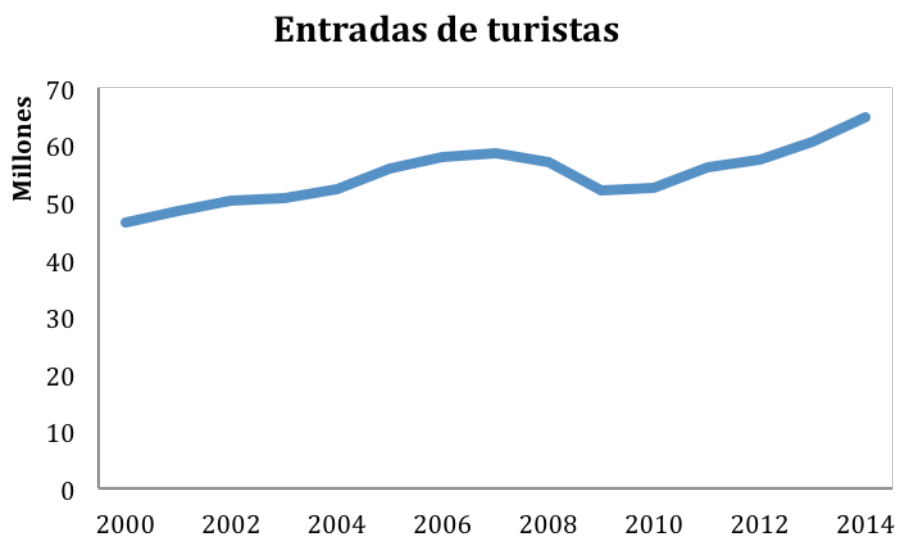
## **Chapter 1: Introducción**

### **1.1 Introducción**

La importancia del turismo en el desarrollo económico, y más concretamente en el caso de la economía española ha sido fuertemente estudiado tanto por políticos, cómo académicos o investigadores. Como señala el World Travel and Tourism Council-WTTC, en su edición de 2016, el turismo supone cerca de un 10% del product interior bruto (PIB) mundial y emplea a casi 300 millones de personas, lo que supone 1 de cada 11 puestos de trabajo. En el caso español, el sector turístico supone la entrada de casi 60 millones de turistas en el ultimo año (Segundo país del mundo) y alrededor de un 6% del PIB según la cuenta satélite de turismo. Estos datos ponen de manifiesto la importancia del turismo dentro de la economía, y supone un aliciente para economías como la española donde tras diez años se empieza a ver la salida a la crisis económica iniciada en el año 2008. Como se puede observar en la figura 1, la entrada de turistas en España en los últimos quinc años ha ido creciendo de forma continua, salvo en el inicio de la crisis en el año

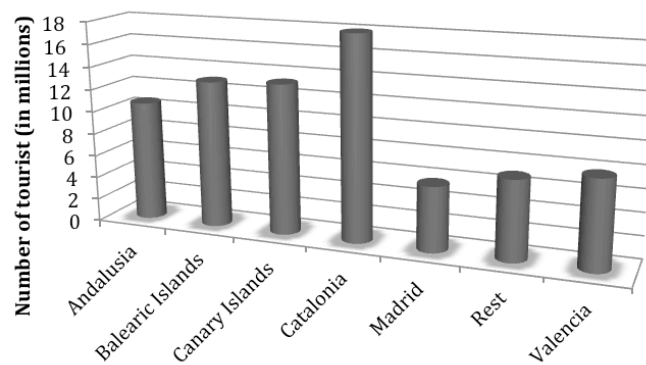
2008. Este crecimiento, está fuertemente relacionado con actividades del Mercado turístico (hoteles, restaurantes, transporte), por lo que una sostenibilidad de la actividad turística se revela como pilar fundamental y motor básico del crecimiento económico español (Cuadrado-Roura and López, 2015).

Figura 1. Entrada de turistas en España



Sin embargo, se hace necesario destacar el comportamiento distinto de estas entradas en relación a su destino por CC.AA. así, como se observa en la figura 2, Cataluña y las islas Baleares y Canarias son los

destinos fundamentales de estas entradas, teniendo un caracter más residual la comunidad de Madrid y el resto.



Por todo ello, se presenta una gran oportunidad para profundizar en el estudio de la relación existente entre los distintos destinos turísticos españoles. Determinar el comovimiento, la posible sincronía, y los destinos más y menos relacionadas entre ellos, pueden ser cuestiones muy interesantes para los policymakers a la hora de elaborar las políticas turísticas.

## **1.2. Datos**

En esta tesis, con el objetivo de facilitar la comprensión de las relaciones de causalidad entre crecimiento y consumo de energía, la persistencia de la relación y el comportamiento de las emisiones según la fase de crecimiento económico, se proponen el uso de series temporales desde fuentes de datos alternativas así como un catálogo de recursos econométricos recientes.

Los datos utilizados en los dos primeros capítulos, son observaciones mensuales que van desde enero del año 2000 hasta marzo del año 2017. El indicador utilizado son las llegadas turísticas hacia las distintas CC.AA. españolas ( Andaluía, Baleares, Canarias, Cataluña, Madrid, Comunidad Valenciana y resto de España). Los datos se han obtenido de Frontur y del Instituto Nacional de Estadística (INE). Por ultimo, los datos referentes al tercer y último capítulo se han hecho uso de los microdatos de la Estadística de Movimientos turísticos en Frontera y la Encuesta de Gasto Turístico (FRONTUR y EGATUR) llevadas a cabo por el INE. Estas operaciones se incluían dentro del Plan Estadístico Nacional 2013-2016 bajo la responsabilidad de la Secretaría de Estado de Turismo, pero tras la firma de colaboración entre

Turespaña y el INE a partir de octubre de 2015 es este último organismo el responsable de la metodología, diseño de muestras y recogida de datos

### **1.3. Aplicaciones econométricas**

En el primer capítulo, se utiliza la metodología de cointegración fraccional de Johansen y Nielsen (2012) desarrollado en el programa de Matlab por Nielsen and Popiel (2016). En este trabajo, contrastamos tanto las relaciones a largo plazo entre las distintas llegadas a las CC.AA. como, mediante el mecanismo de corrección del error, la evolución de dichas variables a corto plazo, indicándonos las regiones débilmente exógenas, es decir, aquellas que son independientes a la relación a largo plazo.

En el segundo capítulo, para el ciclado y el comovimiento y sincronía de dichas llegadas, hacemos uso de la metodología propuesta por Bry y Boschan (1971), posteriormente implementada por Harding y Pagan (2002). En este artículo, se determinan las fases de expansión y recesión de los ciclos de llegadas de cada CC.AA. así como la posible sincronía entre ellas.

Finalmente, el capítulo tercero, se utiliza una metodología de datos de panel para clarificar cuales son los determinantes del gasto turístico de los turistas internacionales, utilizando como variables el origen de los turistas, su destino, la fecha de estancia, etc.

#### **1.4. Esquema de capítulos y principales aportaciones de la tesis**

En el capítulo 2, aplicamos el modelo Vector Autor regresivo Fraccionalmente cointegrado (FCVAR son sus siglas en inglés) propuesto por Johansen and Nielsen (2012) y ampliado por Nielsen and Popiel (2016) y es una expansión del Vector Auto Regresivo Cointegrado (CVAR) propuesto por Johansen en 1995. Este modelo nos permite estudiar las posibles relaciones de equilibrio a largo plazo entre distintas variables y, además, estudiar si existe exogeneidad en alguna de ellas, que nos podría relucir información significativa en el mercado turístico español por llegadas de turistas a las regiones. Por tanto, la aplicación de esta metodología es totalmente nueva en la literatura existente, ya que rechaza la asunción de que las variables seleccionadas sigan la dicotomía  $I(0)/I(1)$  y que el término de error siga un proceso  $I(0)$  en el caso de que las series estén cointegradas. Por tanto, esta

aproximación nos aportará información útil para los profesionales del turismo y para los encargados de realizar políticas de turismo en España.

Por ello, los datos seleccionados se han obtenido del FRONTUR, perteneciente al Instituto Nacional de Estadística (INE). Estos datos corresponden a las llegadas a los principales destinos de turistas por regiones, es decir, hemos dividido en Andalucía, Islas Baleares, Islas Canarias, Cataluña, Comunidad Valenciana, Madrid y el resto de España como una región. La muestra abarca desde enero de 2000 hasta diciembre de 2016, teniendo 204 observaciones ya que los datos tienen una periodicidad mensual.

La aplicación de la metodología anteriormente citada sigue una estrategia empírica que consiste en el estudio de la existencia de una tendencia común, mediante la aceptación o rechazo de la hipótesis que contrasta si la cointegración fraccional es más apropiada que la estándar, que en nuestro caso queda rechazada esta hipótesis por lo que podremos continuar el estudio bajo las premisas de la cointegración fraccional. Un segundo paso correspondería con el estudio de las posibles exclusiones del largo plazo de las regiones dadas. Antes, vemos los posibles vectores de cointegración, que en este estudio son

4. Testando la hipótesis de exclusión, son las Islas Canarias y Madrid las regiones que no comparten la relación a largo plazo con el resto de regiones, lo que puede permitir la consideración de que el mercado podría estar segmentado. Por último, estudiamos la débil exogeneidad para determinar qué región o regiones conducen esta relación. Aquí apreciamos como Cataluña y Madrid son débilmente exógenas que quiere decir que estas variables se anticipan al comportamiento del resto de regiones, implicando que lo que ocurre en estas regiones corresponden a cuestiones intrínsecas.

Estos resultados nos permiten obtener unas conclusiones acerca del comportamiento del mercado turístico español. Por un lado, encontramos que Madrid es totalmente independiente al resto de regiones de España, mientras que Cataluña podría estar configurada como un posible líder en los movimientos del resto de regiones. Por otro lado, en el caso de las Islas Canarias, aunque tiene un comportamiento diferente en el largo plazo, muestra una clara conexión con el resto de regiones españolas. Las implicaciones para los ‘policy makers’ nos llevan a sugerir una atención sobre Cataluña como indicador de los movimientos turísticos en España. Además, aunque la mayoría de regiones están muy relacionadas, algunas se presentan segmentadas.

En el capítulo 3 estudiamos las posibles similitudes cíclicas y los co-movimientos de las regiones españolas para estudiar su posible integración. Para ellos hemos aplicado una metodología muy parecida a la que usa el National Bureau of Economic Research (NBER) y desarrollada por Bry and Boschan (1971). Esta metodología corresponde al algoritmo BBQ, aunque en este estudio se aplica el algoritmo BBQ modificado (MBBQ) desarrollado por Harding and Pagan (2002). Previamente a la aplicación de este algoritmo, aplicaremos el filtro de Hodrick-Prescott para obtener el ciclo de las series y el filtro TRAMO-SEATS para suavizar las series para la posterior identificación de los puntos de inflexión como hacen Gouveia and Rodrigues (2005) en su trabajo. El algoritmo MBBQ nos dará información relevante para el estudio de las similitudes cíclicas y co-movimientos de nuestras regiones, tales como los picos y valles que quedarán definidos por valores binarios, es decir, si una región o país está en expansión tomará el valor 1 y, por el contrario, si se encuentra en recesión, tomará el valor 0. Además, algunas características de las fases de los ciclos también serán proporcionadas por este algoritmo, tales como la duración, que es el número medio de meses entre puntos de inflexión; la amplitud, que mide el incremento medio; y el exceso que es la medida relativa de la forma de

las expansiones y recesiones y que muestran el curso real de las series entre los puntos de inflexión en contra de la trayectoria real. Por último, emplearemos el escalado multidimensional (MDS) para capturar las distancias entre las disimilitudes de las variables seleccionadas.

Como hicimos en el capítulo anterior, las variables seleccionadas están tomadas de FRONTUR, perteneciente al Instituto Nacional de Estadística (INE). Usaremos el número de turistas que llegan a cada región, es decir, hemos dividido las regiones en Andalucía, Islas Baleares, Islas Canarias, Cataluña, Comunidad Valenciana, Madrid y el resto de España como una región. La muestra abarca desde enero de 2000 hasta marzo de 2017.

Los resultados obtenidos nos han dado unas herramientas que podrían ayudar a los ‘policy makers’. En primer lugar, en el estudio de los principales ciclos en el mercado turístico español, obtenemos unos puntos de inflexión que concuerdan con la crisis financiera vivida recientemente y que afectó a todas las regiones. Además, encontramos un ciclo cuasi-generalizado que corresponde con la crisis de deuda soberana. También encontramos una sincronización general entre las regiones que es determinada por la estructura de todas ellas.

Profundizando en las características del ciclo, encontramos como Cataluña y Madrid tienen características particulares a diferencia del resto de regiones, por lo que se recomienda a los ‘policy makers’ que para poder aplicar una política eficaz, no se debe tener únicamente en cuenta a los ciclos sino, también a la heterogeneidad de cada región. Además, estos resultados evidencian que podría existir una política turística común que coincidiría con las políticas particulares de cada región. En este sentido, si los responsables políticos quieren centrarse en alguna política turística particular, deberían centrarse en Cataluña o Madrid, ya que dirigen al resto de regiones.

Finalmente, el capítulo 4 y último, ha tratado de determinar cuales son los determinantes del gasto turístico de los turistas internacionales. Consideramos que los resultados obtenidos resultan muy interesantes para los policymakers con el objetivo de maximizar los ingresos por turistas, dado que estos son un fuerte motor económico tal como predice la llamada “*hipótesis tourism led-growth*” que indi-

ca como el turismo (en especial, los ingresos turísticos) se revela como una fuente principal en el crecimiento económico de un país.

**Tabla 1:** Síntesis de los capítulos de la Tesis

<b>Capítulo</b>	<b>Objetivos</b>	<b>País</b>	<b>Datos</b>	<b>Marco Econométrico</b>
<b>2</b>	Estimación de las relaciones a corto y largo plazo entre los distintos destinos turísticos de las regions españolas.	España	We use the number of tourists by the region's main destination (Andalusia, the Balearic Islands, the Canary Islands, Catalonia, Valencia, Madrid and the rest of Spain). 2000m1 to 2016m12. (monthly data). Frontur and INE.	Fractional cointegration (Johansen, 2012, Nielsen and Popiel, 2016)
<b>3</b>	Comovimiento y ciclado de los distintos ciclos turísticos por regiones españolas.	España	We use the number of tourists by the region's main destination (Andalusia, the Balearic Islands, the Canary Islands, Catalonia, Valencia, Madrid and the rest of Spain). 2000m1 to 2016m12. (monthly data). Frontur and INE.	Harding and Pagan (2002, 2006)
<b>4</b>	Determinantes del gasto turístico de los turistas internacionales	España	Microdatos de la Estadística de Movimientos turísticos en Frontera y la Encuesta de Gasto Turístico (FRONTUR y EGATUR) llevadas a cabo por el INE.	Datos de panel

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**PART II: SPANISH TOURIST MARKET.  
MACROECONOMETRIC APPROACH**

## **Chapter 2: The Spanish tourist market segmentation under a fractional cointegration view**

This work analyses the relationships in the Spanish tourist markets by region. In a novel approach from the literature, we use a model of Fractional Cointegration (FCVAR), [Johansen (2008a, b) and Johansen and Nielsen (2012)], which is an expansion of the CVAR, proposed by Johansen (1995) with monthly periodicity from 2000m1 to 2016m11. This approach provides a novel methodology applied to the tourism literature. It has allowed us to avoid the restrictions associated with traditional cointegration while understanding the stability of Spanish tourism markets at the same time. In particular, our results reveal several patterns in the Spanish tourism regions. Despite a common relationship that emerges across a majority of regions, Catalonia could be a predictor of the pattern for the rest of these regions, while Madrid seems to be independent in the relationship analysed. Furthermore, it is crucial to note that although most regions are highly related, some of them are segmented. Therefore, when aiming to reach an equilibrium of the Spanish tourist markets in the long term, these perspectives need to be considered in designing tourism policies.

## 2.1. Introduction

The tourism importance of economic development (specifically, Spain) is widely sustained for politicians, citizens, academics, and researchers. As shown by the recent study published by the World Travel and Tourism Council-WTTC, 2016, last year, tourism accounted for nearly 10% of world GDP (US\$7.6 trillion) and employed nearly 277 million people. As evidenced by these data, all the agents that attend to tourism found a way to improve the current economic scenario in Spain, where the crisis has been going on for more than ten years. In the Spanish case, the crisis broke the increasing trends observed at the beginning of the 2000s. Activities linked to tourism, such as hotels and restaurants or transportation, are highly dependent on the evolution of external demand. They have enabled better cyclical behaviour in tourism activities, allowing this sector to remain the driving force of the Spanish economy (Cuadrado-Roura and López, 2015). Indeed, Spain is the world's leading tourist destination and second in the number of arrivals and revenues (-58.1 million). International tourists in 2006 gave tourism a surplus of 27.444 million euros (Tourism, 2020).

Studies usually analyse the effects of tourism on growth in the so-called *Tourism-led Growth* hypothesis (ILG) in an aggregate point of view without distinguishing the idiosyncrasy of the possible deviations within a

country. Recently Tang and Tan (2013) suggested the importance of analysing the stability and aggregation bias of the TLG. Furthermore, the literature strongly argues that there are many factors that play a key role in tourism demand, including infrastructure of the tourism supply (Khadaroo and Seetanah, 2008), the role of institutions through regulations or the imposition of tourism taxes (Aguiló et al, 2005), the economic development of regions (measured by unemployment rates) (Cho, 2001), and income distribution (Morley 1998). Also analysed are the relative price of tourism and the quality of service, security perceptions (Tang and Abosedra, 2013; Albandejo et al., 2014 or Pavlic, 2015), the destination promotional expenditure, (Crouch et al. 1992), changes in tourists' tastes or seasonal variations (Lim 2004), and the educational level of tourists and their age distribution (Alegre and Pou, 2004), among others. In this sense, there are different conditions that allow consideration that tourism markets differ, even within the tourism market of any country.

Given that the distribution of Spanish tourism is very heterogeneous within the territory (Borrás et al, 2016), our paper contributes to the tourism literature in a novel way because we consider the tourism heterogeneity pattern and the stability of this behaviour both inside a country and over time. On the one hand, we propose that Spanish destinations are heterogeneous, and for this reason, we are interested in establishing a deeper knowledge

about the underlying factors of Spanish tourism by testing a FCVAR model (Johansen (2008a,b) and Johansen and Nielsen (2012)) (which is an expansion of the CVAR, proposed by Johansen (1995)). On the other hand, we also analyse the stability of the series to establish an adequate framework for politicians and practitioners, especially for each region. To the best of our knowledge, our paper proposes a new approach to the study of the relationship between Spanish tourism markets in the existing literature. Therefore, we consider that the standard unit root and cointegration test might be too restrictive ( $I(1)/I(0)$  dichotomy). Indeed, we reject the assumption that tourism markets follow this dichotomy  $I(1)/I(0)$  and that the error follows a  $I(0)$  process in the case of the cointegration of markets. To carry this out, we develop a FCVAR for the Spanish tourism regions. We find that, despite a common relationship emerging across regions, Catalonia could be a predictor on the rest of the regions' behaviours, while Madrid seems to be independent in the relationship analysed.

The remainder of our paper is constructed as follows. Section 2 presents a brief review of the short literature concerning the co-movements integration, considering the idiosyncrasy inside a country. The third section involves the data and econometric approach used to obtain the results presented in section 4. These sections allow us to conclude several specific political recommendations for each region considered in this study.

## 2.2. Literature overview

A recent study developed by Lu and Liu (2015) exposes research that has been published in thousands of tourism papers over the past four decades. In their article, they reveal the key topics by identifying five groups, each with more than 400 reported articles. The major topics of each group are ‘tourism sustainability’, ‘tourism destination choice’, ‘sociology of tourism’, ‘tourism demand forecasting’, and ‘climate change’. Many variables have been analysed to determine the influences of different determinants for different visit purposes (see Peng et al., 2015). Some of them are the relative price of tourism, quality of service (Albadejo et al., 2014), volume of international trade, transportation costs, and size of the population within the origin country (Turner and Witt 2001). Also included are trends in immigration patterns (Seetaram and Dwyer 2009), destination promotional expenditure (Crouch et al. 1992), changes in tourists’ tastes, seasonal variations (Lim 2004), climate change (Lise and Tol, 2002), political instability (Dhariwal 2005; Naude and Saayman 2005), foreign direct investment (Tang et al., 2007), unemployment rates (Cho, 2001), income distribution (Morley 1998), quality or security perceptions (Tang and Abosedra, 2013; Albadejo et al., 2014 or Pavlic, 2015), and educational levels of tourists and their age distribution (Alegre and Pou, 2004), among others.

Despite this broad classification of the most outstanding topics in research related to tourism, the current application of econometric techniques is important in determining these lines of tourism studies. In this sense, in the study proposed by Song et al. (2012), they show how the development of these techniques has fundamentally evolved by applying these methods to time series data. They have since developed dynamic modelling, in the sense of the integration of the time-varying-parameter (TVP) technique and the causal structural time series model (Song et al., 2011), the cointegration-error correction method—the bound test of Pesaran et al., (2001), tests of the long-run co-integration relationship, developments in system-of-equations approaches such as the vector autoregressive model (VAR), and the almost ideal demand system (AIDS) applied to consumption categories and destination competitiveness. On the other hand, panel data analysis techniques have been less applied in tourism demand analyses (e.g., Garin-Munoz, 2009; Ledesma-Rodriguez et al., 2001; Naude and Saayman, 2005; Seetaram, 2010).

A more recent line of studies has emerged with the intent of explaining the interdependence and the movements that exist between the tourist markets. This is because the tourist choice is competing in a global framework, where a shock in any tourist destination affects the direction of tourist flows and, even more importantly, the long-term stability of the relationship. These studies often first confirm the co-movements of tourism demand in

different destinations using the co-integration technique. They then use VAR models to test for the cause-effect relationships among this demand through the Granger causality test (Granger, 1969). The Granger Causality approach applied to tourism tries to identify the existence of causal relationships between the tourism demand variables across different destinations, in particular, aiming to provide the causality and its direction between growth and tourism flows (see Tugcu, 2014 for a survey). For its part, Forbes and Rigobon (2002) explained co-movement as a contagion as a significant increase in cross-market linkages after a shock to one country or group, while the Johansen cointegration test (1988, 1991) is applied to prove common stochastic trends between the markets. In this line, this test affords more robust results than other cointegration tests when there are more than two variables (Gonzalo, 1994). Thus, if cointegration does not hold, markets are not linked in the long run, and it is, therefore, possible to be segmented. For this reason, testing for cointegration and any changes in its degree over time is important.

## **2.1 Spanish tourism idiosyncrasy**

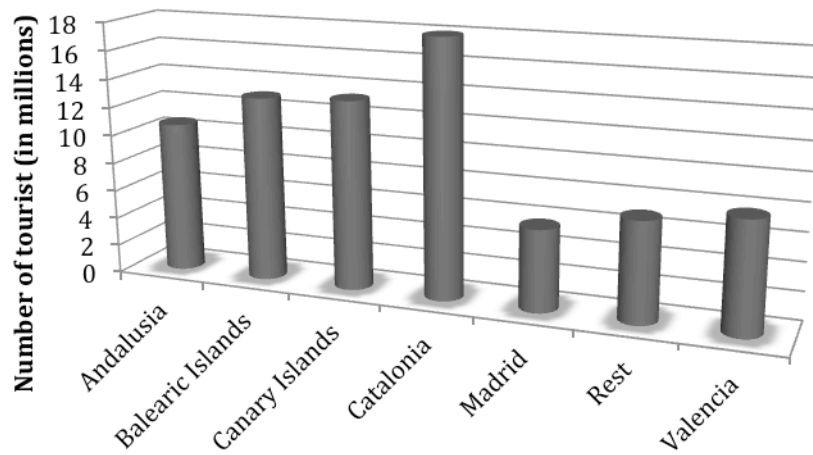
Although the majority of studies applied to the Spanish case do not take into account the differences between tourist destinations within the country, this subsection is devoted to exploring the idiosyncrasies underlying Spanish tourism, at least in the main tourism destinations. These are Andalu-

sia, the Balearic Islands, the Canary Islands, Catalonia, Madrid and Valencia. According to the United Nations World Tourism Organisation (United Nations World Tourism Organisation, 2013), although tourism in Spain has been increasing since 2010 as a consequence of the Arab Spring (which began in December of 2010 in Tunisia and rapidly spread to other Arab countries and international terrorism in countries like Turkey), the rise in tourism in Spain beyond the regional average (i.e., the Mediterranean area) is due to internal improvements, such as the modernisation of supply, human resource training, quality, marketing, and promotion advances. This new situation, together with more optimistic economic forecasts (International Monetary Fund, 2013), has fed the idea that tourism could substitute for weakened domestic demand and revitalise the economy (Inchausti-Sintes (2015)).

Spain has focused its action on the great flows of "mass tourism" with a strong concentration of supply on the coast. However, within the Spanish territory, alternative tourism markets emerge from the traditional sun and beach regions. Hence, each region in Spain has designed very different strategic tourism policies to create several markets in the tourist destination choices in Spain, with respect to the cultural and environmental similarities, the geographic proximity, and the economic determinants. In this sense, despite the whole of Spanish tourism having developed its own infrastructures, Madrid has become a nerve centre for the arrival of tourists for the rest of

the region, as is supported by the World Travel and Tourism Council. For better comprehension of the Spanish tourist market, we show its structure in figure 1. As we can observe, around the 75% of tourism appears in four regions (i.e. Andalusia, Balearic Islands, Canary Islands and Catalonia).

**Figure 1:** Number of tourist by region main destination (2016)



In particular, in 2006, 10% of the tourists who came to Spain had a cultural motivation. Although it is a product that consolidates year after year, it still has a long journey facing the horizon in 2020. Additionally, tourism for meetings, congresses, and incentives is a segment in which Spain has an increasing market share worldwide, with Madrid and Barcelona among the 20 cities with the highest number of business events held per year. While sports tourism has become an attraction, Spain is the main European tourist destina-

tion for golf, with a market share of approximately 35%. Spain is very much in front of the nearest competitor, Portugal.

Regarding the several types of tourism found in Spain, the main locations for sun and beach tourism include Andalusia, the Canary Islands, the Balearic Islands and Valencia. They are privileged destinations in terms of seasonality, especially the Canary Islands. In this group, the tour-operators play a decisive role in tourist movements, and despite plans to diversify the market, there is a predominance of sun and sand mass tourism. This is characterized by tourists (usually visiting the islands on package holidays that generally include transport, accommodation and half-board) who normally have a middle or middle-low income, leading to limited tourist expenditures, usually coming from Britain or Germany (Aguiló et al. 2005). Regarding the main effects of tourism on economic development, firstly, the Canary Islands represent a clear example of “sun, sand and sea” tourism market. In fact, tourism accounts for at least 50% of the GDP (80% according to some authors) of the islands (Garín-Muñoz, 2006). Second, the Balearic Islands (Spain) revenue from services accounts for approximately 80% of the Balearic gross domestic product. There are currently more than 400,000 beds available, a figure that exceeds that of other traditional tourist destinations like Greece or Turkey. Finally, in a similar way in the group of sun and sand tourism, Valencia presents a similar behaviour to that described in the case of the Balearic Islands.

As a notable case, this region includes Benidorm as the destination that absorbs the largest flow of tourists from the Mediterranean Coast. It has developed like a typical example of the resorts that emerged along the Mediterranean coast in the 1960s during the mass tourism boom that catered primarily to foreign tourists through large international tour operators who controlled the market.

On the other hand, in this analysis of the region that more tourists visit in Spain is a group that presents a mixture of cultural and sun and sand tourism. This is the case of Andalusia and Catalonia, where in the first case, cities like Seville, Cordoba and Granada complement a tourism offering of sun and beach that is manifested mainly in the Costa del Sol. In this line, Catalonia, because of its strategic location, has traditionally been a bridge between Europe and the Mediterranean. It has historically developed an open character for itself based on all types of relationships: cultural, social and commercial (Garay and Canovés, 2011). In the last decades, Catalonia represents this situation strongly, where Barcelona has positioned itself among the 10 most visited cities in the world, gathering a wide cultural agenda, numerous congresses and international events (such as the GSMA Mobile World Congress or the International Wine Tourism Conference) and a huge set of infrastructures. It is destined to compete with the sun and beach tourism in areas such as the Costa Dorada or the Costa Brava.

Madrid, meanwhile, is experiencing a clear cultural tourism specialization due to the attractiveness of some of its Star Museums and other events that have resulted in a rise in visitors from Asia, especially from countries like China, Japan and South Korea. Finally, the configuration of tourism in the Basque Country also shows diversity in relation to the reason for the visits. According to data from Frontur, only visits to family or friends and voluntary health treatments are the main reasons for visits to this community, a fact that is supported by the high number of French visitors due to the geographical proximity. However, Bilbao and San Sebastian have been developing a wide cultural catalogue that complements gastronomic and nature tourism in the Basque Country.

### **2.3. Econometric approach**

Our econometric strategy is based in obtaining and analyzing at a monthly frequency; the model estimation and then we perform statistical tests of cointegration, exclusion test and weak exogeneity.

Our objective is to study the idiosyncrasy of the Spanish tourism. In this paper, the FCVAR model allows us to study the common long-run equilibrium relationship between the studied regions. The model is a generalization of Johansen's (1995) cointegrated vector autoregressive (CVAR) model

to allow for fractional processes of order  $d$  that co-integrate to order  $d \leq b$ . This model has the advantage of being used for stationary and non-stationary time series. This model is presented in Johansen (2008a, 2008b) and further developed in Johansen and Nielsen (2012) and Nielsen and Popiel (2016) provided a Matlab program, and it is a new approach in the tourism literature.

To introduce the FCVAR model, we begin with the well-known, non-fractional, CVAR model. Being  $Y_t = \mathbf{1}, \dots, T$  a  $p$ -dimensional  $I(1)$  time series. So, the CVAR model is:

$$\begin{aligned} \Delta Y_t &= \alpha \beta' Y_{t-1} + \sum_{i=1}^k \Gamma_i \Delta Y_{t-i} + \varepsilon_t \\ &= \alpha \beta' L Y_t + \sum_{i=1}^k \Gamma_i \Delta L^i Y_t + \varepsilon_t \end{aligned}$$

The fractional difference operator introducing persistence in the model is  $\Delta^d$  and the fractional lag operator is  $L^b = (1 - \Delta)^b$ . Replacing lags operators in by their fractional counterparts  $\Delta^d$  and  $L^b = (1 - \Delta^d)^b$  and applying  $Y_t = \Delta^{d-b} X_t$ , we obtain:

$$\begin{aligned} \Delta^d X_t &= \alpha \beta' L^b \Delta^{d-b} X_t + \sum_{i=1}^k \Gamma_i \Delta^d L^i X_t \\ &+ \varepsilon_t. \end{aligned}$$

As always,  $\varepsilon_t^1$  is  $p$ -dimensional i.i.d with mean zero and covariance matrix  $\Sigma$ . The parameters  $\alpha$  and  $\beta$  are  $p \times r$  matrices, where  $0 \leq r \leq p$ . In matrix  $\beta$  the columns are the cointegrating relationships and  $\beta'X_t$  are the stationary combinations, i.e. the long-run equilibrium. The coefficients in  $\alpha$  correspond the speed of adjustment unto equilibrium. Thus,  $\alpha\beta'$  is the adjustment long-run and  $\Gamma_i$  denotes the short-run comportment of the variables.

Considering  $\mu = \bar{y}$  as an assumption of no persistence in the cointegration vectors and a constant mean term for the cointegrating relations, we reach an intermediate step before the final model. We consider the simple model as:

$$\Delta^d(X_t - \mu) = L_d \alpha \beta' (X_t - \mu) + \sum_{i=1}^k \Gamma_i \Delta^d L_d^i (X_t - \mu) + \varepsilon_t,$$

where the variable  $\mu$  is a level parameter that shifts each of the series by a constant in the way to avoid the bias related to the starting values in the sample (Johansen and Nielsen, 2016).  $\beta'\mu = -\mu'$  explains the mean stationary cointegrating relations. Johansen and Nielsen (2012) show that the maximum likelihood estimators  $(\alpha, \alpha, \Gamma_1, \dots, \Gamma_k)$  are asymptotically normal and the maximum likelihood estimator of  $(\beta, \mu)$  is asymptotically mixed normal.

For testing the hypotheses on the model parameters we use FCVAR model which is almost similar to CVAR (Johansen, 1995). We test if a region is a part of a cointegrating relationship and is included in a long-run equilibrium. Hypotheses on  $\beta$  can be formulated:

$$\beta = H\psi,$$

where H is a matrix of dimension  $p \times s$  and contains the restrictions and  $\psi$  is a matrix of free parameters with dimension  $s \times r$ . The degrees of freedom are given by  $df = (p - s)r$ . If  $r \geq 1$ , the degrees of freedom of the test is  $df = \sum_{i=1}^r (p - r - s_i + 1)$  (Jones, Nielsen and Popiel, 2014).

With the test of hypotheses  $\alpha$ , we test the weak exogeneity as:

$$\alpha = A\psi,$$

where A is a matrix of dimension  $p \times m$  and  $\psi$  is a  $m \times r$  matrix of free parameters with  $m \geq r$  (Jones, Nielsen and Popiel, 2014). The degree of freedom of the test is given by  $df = (p - m)r$ . If a row of  $\alpha$  is zero, the associated variable is weakly exogenous. Note that matrix  $\alpha$  and  $\beta$  are normal-

ized separately in the same way for the CVAR model because the degrees of freedom are non-standard.

To the best of our knowledge, this econometric methodology is the first time that has been applied in the tourism literature. Aiming to summarize our econometric approach, in table 1 is shown the purpose about testing the integration among different regions in the Spanish tourist market. In this sense, the first step consists in testing the existence of a common trend, i.e. this is a cointegration analysis and we study if the fractional cointegration is more appropriate than standard cointegration ( $H_1^d$ ). In the second step, we study the possible exclusion of a given region in the long-run relationship ( $H_2^e$ ) and finally, the last step consists of analyzing the weak exogeneity in order to determine the existence of a driver in this relationship ( $H_3^e$ ).

**Table 1.** Strategy of Empirical Research

	Procedure	Hypotheses
1	<i>Step</i> Fractional Cointegration?	$H_1^d: \alpha = \beta = 1$ : Is the fractional cointegration more appropriate than traditional cointegration?
2	<i>Step</i> Test of exclusion from the cointegrating relationship: tourist market by region integration	$H_2^e: \beta_i = 0$ : Each region does not share the long-run equilibrium relationship
3	<i>Step</i> Test of weak exogeneity	$H_3^e: \alpha_i = 0$ : A region could be a driver in the relationship i.e. does not adjust to relationship and exhibits independence.

*Notes:*  $i$  = Andalusia, Balearic Island, Canary Island, Catalonia, Madrid, Rest of Spain and Valencia

## 2.4. Data and Results

This section presents the results obtained from the application of our econometric exercise described above. For this application, the data have been taken by FRONTUR from Instituto Nacional de Estadística (INE). We use the number of tourists by the region's main destination (Andalusia, the Balearic Islands, the Canary Islands, Catalonia, Valencia, Madrid and the rest of Spain). Time series have monthly periodicity and are available from 2000m1 to 2016m12.

The set of results obtained will be presented in tables 2, 3, 5 and 5. Firstly, table 2 corresponds to the study of a fractional integration analysis from a univariate perspective and the fractional cointegration analysis from a multivariate perspective. As a preliminary step, we estimate the order of fractional integration by region. To motivate a fractionally cointegrated model, we first discuss univariate results observing long memory, and then we proceed to the estimation of the fractional parameter  $d$  for each univariate series. These columns are semiparametric log-periodogram regression estimates from Geweke and Porter-Hudak (1983) computed with bandwidths  $m = T^{0.4}$ ,  $m = T^{0.5}$ , and  $m = T^{0.6}$ , respectively. We can see as the bandwidths change, the estimates of  $d$  increase to a values between 0.750 and around 1 (except in Balearic Island where this estimates decrease), could be non-stationary but mean reverting process.

**Table 2:** Univariate Analysis. GPH estimates.

	$m=T^{0.4}$	$m=T^{0.5}$	$m=T^{0.6}$
	$d$	$d$	$d$
<b>Andalusia</b>	0.294 (0.237)	0.812 (0.208)	0.775 (0.177)
<b>Balearic Islands</b>	1.086 (0.287)	0.651 (0.218)	0.459 (0.157)
<b>Canary Islands</b>	0.809 (0.489)	0.811 (0.262)	0.845 (0.150)
<b>Catalonia</b>	0.832 (0.177)	0.839 (0.098)	0.799 (0.096)
<b>Madrid</b>	0.870 (0.114)	0.732 (0.109)	1.044 (0.136)
<b>Rest of Spain</b>	0.541 (0.224)	0.842 (0.155)	0.882 (0.107)
<b>Valencia</b>	0.442 (0.214)	0.843 (0.186)	0.749 (0.131)

Notes: GPH denotes the Geweke and Porter-Hudak semiparametric log-periodogram regression estimator. Standard errors are given in parenthesis beneath estimates of  $d$ . The sample size is 204.

To continue with the econometric analysis, the fractional cointegration analysis from a multivariate perspective is shown in table 3. In this approximation, we firstly detail the optimal lag length for the subsequent estimation of the cointegration ranking following the BIC criteria. The results of this estimation are shown in Annex 1, and show that the lag length selected is 1. Once the lag length is determined, we proceed to test if a fractional cointegration is more appropriate than traditional cointegration ( $I(1)^d$ ). As the results reveal, this hypothesis is strongly rejected, so we can conclude that a fractional cointegration is appropriate for this study.<sup>1</sup> In this point, it is well known that the fractional approximation is more adequate and we also know the lag,

<sup>1</sup> The null hypothesis is  $d = 1$  and its rejection implies that FCVAR model is more convenient than a CVAR model (see Jones, Nielsen and Popiel (2014)).

so we determine the long-term relationships between the regions using the cointegration rank test. In the table 3 we show that the numbers of cointegrating vectors are 4.

**Table 3:**  $H_1^d$ : Fractional Cointegration test and Cointegration Rank test

Hypothesis test	df	LR statistics	P-value
$H_1^d$	1	6.487	0.011
Rank	Log-likelihood	LR statistics	P-value
0	1980.569	144.113	0.000
1	2011.787	81.677	0.000
2	2029.072	47.107	0.005
3	2040.301	24.650	0.076
4	2046.737	11.777	0.226
5	2050.559	4.133	0.388
6	2052.559	0.132	0.716
7	2052.625	---	---

*Notes:* Degree of freedom is denoted by df. The table shows the rank test. Following Jones, Nielsen and Popiel (2014), the significance level is set to 10% for exclusion. The sample size is 204.

In addition, in a second step, we test the exclusion hypothesis ( $H_1^e$ ) for each region, obtaining the results that our variables are in the cointegrating relation. The exception is the case of Madrid and the Canary Islands, in which we reject the null hypothesis of cointegration with p-values of 0.148 and 0.133, respectively, as is shown in table 4. Those results imply that there does not exist a long run relationship between Madrid and the Canary Islands

with the rest of the regions; consequently, this market could be considered as segmented.

**Table 4:**  $H_0^R$ : Test of exclusion from cointegrating relationship

Hypothesis test	df	LR statistics	P-value
$H_{A \setminus U}^R$	4	32.150	0.000
$H_{U \setminus A}^R$	4	20.138	0.000
$H_{C \setminus A}^R$	4	7.062	<b>0.133</b>
$H_{A \setminus C}^R$	4	13.063	0.011
$H_{U \setminus A \setminus C}^R$	4	6.778	<b>0.148</b>
$H_{A \setminus C \setminus U}^R$	4	33.331	0.000
$H_{C \setminus A \setminus U}^R$	4	41.766	0.000

*Notes:* Degree of freedom is denoted by df. The right part of the table reports the p-values for the test of exclusion tested in the Hypothesis test. Following Jones, Nielsen and Popiel (2014), the significance level is set to 10% for exclusion. The sample size is 204.

Finally, in table 5, the weak exogeneity ( $H_0^W$ ) is provided (step 3), and we can observe that each variable is individually weakly exogenous. A rejection of the null hypothesis implies that a region adjusts towards the long-run equilibrium after a shock. Moreover, the test of weak-exogeneity suggests that both Madrid and Catalonia are weakly exogenous, so we can interpret that, for these regions, both are independent from the shocks. These results reveal that anticipations in those two regions do not adjust to shifts occurring in the anticipations for the other regions. This weak exogeneity restriction on Madrid and Catalonia implies that it does not respond to shocks to the long-term equilibrium. In other words, what happens in these two markets is due more to intrinsic issues beyond the long-term equilibrium.

Table 5:  $H_2^w$ : Test of weak exogeneity

Hypothesis test	df	LR statistics	P-value
$H_{AND}^w$	4	8.203	0.084
$H_{BAL}^w$	4	17.004	0.002
$H_{CAN}^w$	4	8.275	0.082
$H_{CAT}^w$	4	5.395	<b>0.249</b>
$H_{BAU}^w$	4	0.969	<b>0.914</b>
$H_{NEF}^w$	4	18.805	0.001
$H_{VAL}^w$	4	24.923	0.000

*Notes:* Degree of freedom is denoted by df. The right part of the table reports the p-values for the test of weak-exogeneity tested in the Hypothesis test. Following Jones, Nielsen and Popiel (2014), the significance level is set to 10% for weak-exogeneity tests. The sample size is 204.

Overall, we find four sets of results very interesting in terms of the regions' behaviours and from the economic implications point of view. First, Madrid presents an independent behaviour from the rest of regions because we have rejected both the  $H_2^w$  and  $H_1^w$  hypotheses. In this sense, we can interpret that the behaviour of Madrid is totally segmented with respect to the rest of the regions, perhaps caused by its status as the political and administrative capital, which increases the affluence of international tourism (Baidal et al. (2014)). Second, Catalonia has a long-term relationship with the rest of the regions, but the weak exogeneity test shows that it is the only one that does not reject this hypothesis. In our analysis, Catalonia could be a predictor of future outcomes in other tourist markets. In other words, Catalonia turned out to be the leading market. Third, the Canary Islands do not share the relationship in the long term, although it does affect the shocks that occurred in

the rest of the regions. The fourth result sustains that the Spanish tourist market presents strong relations between Andalusia, the Balearic Islands, Valencia and the rest of Spain, which implies that any shock in one of these regions has implications on the linkage; consequently, these regions are not segmented. Finally, in table 6, we provide a summary of the results, where it is defined whether the hypotheses are accepted or rejected with a tick or cross symbol, respectively, in the results column. In this table, we also present the views that are valuable to note.

**Table 6.** Summary of results

	<b>Hypotheses</b>	<b>Results</b>
<i>Step 1</i>	$H_1^d$ : Is the fractional cointegration more appropriate than traditional cointegration?	✓
<i>Step 2</i>	$H_2^R: \beta_i = 0$ : Each region does not share the long-run equilibrium relationship	Madrid and Canary Island not share long-run relationship
<i>Step 3</i>	$H_3^a: \alpha_i = 0$ : A region could be a driver in the relationship, i.e. does not adjust to relationship and exhibits independence.	Madrid and Catalonia are weakly exogenous

*Notes:*  $i$  = Andalusia, Balearic Island, Canary Island, Catalonia, Madrid, Rest of Spain and Valencia

## 2.5. Conclusions

Spanish tourism has positioned itself as the main driver of economic development, not only for its contribution to the GDP but also for its important incidence in the generation of employment. Moreover, in the last decade, Spain has experienced a deep stagnation that has resulted in the destruction of employment in a massive way, placing the unemployment rate above 20%. However, the tourism sector has been able to remain at the levels

of growth and job creation that had been generated before the crisis. For this reason, the attention of all economic agents has been focused on this sector, aiming to establish the adequate framework for the Spanish tourism sector and trying to improve its development and privileged positioning worldwide.

This paper has applied FCVAR in a novel approach regarding previous studies by analysing the Spanish tourism heterogeneity pattern and the stability of this behaviour over time. Despite previous studies that usually have been interested in the best knowledge concerning the TLG hypotheses, the causality of several variables in the tourism markets, or even the cointegration between markets, among others, no studies consider fractional cointegration in the tourism literature. A few papers have emerged aiming to analyse the relations between the regions in the Spanish case. Our new approach consists of the FCVAR that allows the rigidity of the traditional approach to be broken in favour of allowing the series to be cointegrated, and it does not necessarily need to be  $I(d)$ .

Given our set of results, these samples show very interesting relations in the different regions of Spain. Although most regions have long-term relationships, there are several cases that should be highlighted in terms of economic implications and tourism policies. On the one hand, Madrid is a market totally independent from the rest of Spanish regions, while Catalonia is configured as the possible leader in the movements for the rest of the re-

gions. Additionally, in the case of the Canary Islands, although it has an independent behaviour in the long term, it shows a clear connection with what happens in the rest of Spanish tourist regions.

From the policy makers' point of view, this article offers some useful tools. It is important to note that a good indicator of the movements in Spanish tourism markets will be to look at what happens in Catalonia. Likewise, given the tendency to carry out tourism policies at the national level, it would be crucial to understanding that although most regions are highly related, some of them are segmented. To reach an equilibrium of the Spanish tourist markets in the long term, these perspectives need to be considered.

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**Append 1: Lag length selection**

Table A1: Lag length selected

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K	AIC	BIC
1	-3905.25	<b>-3579.50</b>
2	-3998.62	-3513.25
3	-4067.48	-3422.49
4	-4183.09	-3378.49
5	-4125.47	-3161.25
6	-4204.72	-3080.88

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*Notes:* The table shows lag length selection and bold indicates lag order selected. The sample size is 204.

### **Chapter 3: Cyclical similarities, co-movements and integration in the Spanish tourist market by regions**

In this article we have studied the relationship between economic cycles and the arrival of tourists to Spain distinguishing by regions. To this end, the Hodrick-Prescott standard calibration providing a basic aspect for band pass filters and the methodology used by the NBER with a significant difference, we use the MBBQ algorithm which is adjusted for quarterly data and was developed by Harding and Pagan (2002). Our results support several interesting ideas in order to establish common and particular policies for each region, and also highlight the relevance to take into account the cycle in its design. In particular, we identify that the cycle matches with the financial crisis (2008) which affected to all the regions and a quasi-generalised cycle in the European sovereign debt crisis (2012). Indeed, a general synchronization among them is determining its structure, although the features of the business cycle show that Catalonia and Madrid have some particular characteristics from the other regions.

### **3.1. Introduction**

In the Eurozone context, the convergence process and the interest in the study of business cycles is in the centre of the debate of politicians, academics and practitioners because it is impossible to agree upon the steps to be taken without agreement on what went wrong (Baldwin et al., 2015). As pointed out by Christodoulakis, Dimelis, and Kollintzas (1995), examining the degree of cyclical similarities across their members become of great interest since it could affect the success of these integration processes because it may significantly raise the costs for countries with idiosyncratic cycles. In addition, new challenges may emerge in case of substantial changes in the interdependences across their economic cycles. In the European case, for instance, following the main results supported by Grigoras and Stanciu (2016), the previous to the Great Recession the European business cycle has been constantly enforced by formal or informal cohesion between EU member states. However, post-crisis developments show signs of a great disconnect, both within Europe and between Europe and the US. Moreover, heterogeneity of business cycle measures hints at a possible overstating of business cycle synchronisation within the EU.

Despite the characteristics of European cycles has been quite analysed (Camacho et al., 2006; Camacho et al., 2008; De Haan et al., 2008; Gächter et al., 2012 or more recently Grigoras and Stanciu, 2016), while the creation of the Euro Area has motivated this approach to literature with greater interest if it (Krolzig and Toro, 2005; Darvas and Szapáry, 2008; Antonakakis and Tondl, 2014), the effects of this cycles in the tourism markets have been less examined. In this regard it is well known the importance of tourism on economic development and specifically for Spain, where in the last year tourism increasing for nearly 10% of world GDP (US\$7.6 trillion) and employ nearly 277 million people.<sup>1</sup> However the recent crisis break the increasing trends observed at the beginning of the 2000's in activities linked to tourism, such as hotels and restaurants or transport are highly dependent on the evolution of external demand, have enabled a better cyclical behaviour in tourism activities allowing that this sector to remain the driving force of the Spanish economy (Cuadrado-Roura and López, 2015). Overall, the relevance of irregular trends and cyclical patterns in tourism demand has been long recognized and researches have been targeted at effective modelling and forecasting strategy due to major business cycle fluctuations strongly influ-

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<sup>1</sup> Indeed, Spain is the world's leading tourist destination and the second by number of arrivals and revenues -58.1 million international tourists in 2006 gave a tourist surplus of 27.444 million euros (Tourism, 2020).

ence consumer demand for goods and services, such as in times of economic recession and boom, (Guizzardi and Mazzocchi, 2010).

According to this great relevance that tourism has in the economic growth and also in its role regarding the rest of economic sectors, in this paper we examine how the cycles would affect the relationship between the Spanish tourism inbounds. So, the key question we follow the shed more light in the tourism literature in this paper is whether and to what extent tourism cycles can be regarded as a direct consequence of business cycles. To achieve this goal, we present a novel approach where the main properties of cycles are analysed, in order to provide a more comprehensive view on business cycle similarities in the Spanish tourism inbounds exploring if there are relations between the origins of tourists arriving in Spain and, even more important, if these relations are disturbed by economic cycles. Our econometric approach is based on---

The rest of this paper follows the next scheme. In the second section we present a brief review of the short literature concerning the cycle and co-movements integration considering the idiosyncrasy inside a country. The third section is devoted to explain the econometric approach followed in this application that allow us to obtain the results presented in section 4. Finally, the conclusion section detail several political recommendations.

### 3.2. Literature overview

The pioneering work in tourism demand cycle devoted to analyse a greater degree of cycle synchronization of tourism demand that observed at the economic cycle level was Gouveia and Rodrigues (2005). Among their results they support that this degree of cycle synchronization has increased over the years and also emerge a presence of a time lag between turning points of economic cycles and tourism demand, suggesting a lag concordance index. Furthermore, they warn the advantages associated with tourism cycle dating are applicable to behavioural studies and asymmetric behaviour modelling based on cycle phases. However, previously to Gouveia and Rodrigues, several theories has explored the growth cycle incidence on tourism demand and motivated by the argument that a destination should enjoy varying levels of popularity over time. One of the earliest of these was the work of Cohen (1972), and subsequently relying on this idea, Butler (1980) also developed over the Cohen's tourists categorization of the types of tourists and where they explain how their behaviour can change over time and depending on the demographic characteristics and importantly on economic cycle, specifically depending on the phase that destination presents. For instance, di Benedetto and Bojanic (1993) used a step-logarithmic function to model attendance at Cypress Gardens over the period 1949–84, aiming to explain the touristic be-

haviour in an initial period of rapid growth, followed by stagnation and then decline. They also measured the impact of new attractions, and environmental influences, such as the fuel crisis of 1974 and 1979, the Worlds Fair, EPCOT Center and the Cuban missile crisis revealing strong evidence in support of the step-regression model as evidence in favour of the usefulness of the lifecycle framework.

In this scenario, Song and Li (2008) highlighted the poor literature looking at tourism cycles, turning points and directional changes. Furthermore, the literature on the relation between the tourism and the business cycle shows a wide variety of methodological approaches to elicit cyclical movements. On the one hand, the business cycle factor has been considered in some studies implicitly accounted for in tourism demand models through explanatory variables subject to fluctuations, such as prices and disposable income (see e.g. Wong, 1997). On the other hand, modelling the long-term relationship and lag structure between tourism demand and the business cycle has generated less expectation and none of these papers has explicitly focused on the dynamic specification and understanding of the cyclical component (see Guizzardi and Mazzocchi, 2010).

Alternative approaches to explain this relationship has applied unobserved components decomposition techniques, such as Koc and Altinay (2007) that applied the TRAMO/SEATS and X-12 ARIMA model to inter-

national tourist spending in Turkey, although they only refer to a joint trend/cycle component. For its part, Brannas et al (2002) analysed the nights stayed in Swedish hotels by Norwegian visitors using an ARIMA-based time series model. In both cases, they find a cycle pattern which tracks the business cycles of the destination and origin countries. In relation to these firsts approximations, several specifications have been developed concerning the application of time series models in tourism researches. In particular, Croes et al. (2017) or Mérida and Golpe (2016) apply a Granger causality test examining this dynamic relationship. In the first case, they demonstrates that business cycles have a causal, dynamic bearing on tourism demand cycles, depending on the intrinsic dimensions that connect the two cycles. For its part, Merida and Golpe (2016) found a nonlinear relationship between tourism cycles and business cycles in Spain. More recently and focusing on cycles, Croes et al. (2017) examine the relationship between business and tourism demand cycles in Aruba and Barbados during 1970– 2015 using a 2SLS method and show that business cycles explain nearly 49% of tourism demand flows to Aruba and nearly 91% to Barbados. Andraz and Rodrigues (2016) also propose the use of an alternative tool introduced by Gayer (2010), known as the “economic climate tracer”, to analyze and monitor the cyclical evolution of tourism source markets to Portugal. They found that German tourism plays a leading role, since its movements are followed with delays by tourism flows

from other countries, and exhibits higher resilience to shocks while domestic and Spanish tourism have both displayed less irregular behaviors than tourism from other source markets. On the contrary, they also support that tourism from the Netherlands and the UK, have displayed irregular patterns, which demonstrates the urgency to diversify tourism source markets to reduce the country's vulnerability to external shocks and economic cycles.

In this controversial context, the detection of tourism cycles depend of many determinants, which generate mixed patterns and structural changes in tourism demand. Kim et al. (2006), explain three main arguments concerning this puzzle. Firstly, they sustain that the income growth is a driver to changes in tourism patterns or the effect of a general recession produce in favour to cheaper destination. In this line, Smeral (2016) has investigated this question demonstrating that income effects vary over time and, therefore, business cycles reveal asymmetrical effects. Secondly, technological progress and trends in the travel sector conduct to new tourism demands destinations and, thirdly, major events and fashions can be a key reason in modifications in tourist flows. Finally, on the supply side perspective, the dependence of performance of tourism firms on business conditions is also determining this relationship (see Chen, 2007; or Ridderstaat and Croes, 2015). Despite of these difficulties aiming to explain the tourism demand and the cycles there is emerging a growing consensus in the tourism literature regarding the interre-

relationship between tourism and economic cycles (see among other Gouveia and Rodrigues 2005; Guizzardi and Mazzocchi 2010; Narayan 2011; Smeral 2012; Merida and Golpe 2016 or Bronner and De Hoog 2016). This cycle relationship between the peaks and troughs of each of these cycles show a certain constancy in the time lag (Gouveia and Rodrigues, 2005). In addition, Grigoras and Stancius (2016) explain that the causal relationship between membership and synchronisation is not straightforward based on the idea that synchronisation is an endogenous process, while exogenous asymmetric shocks associated with structural differences between members would be considered less likely, due to structural convergence which has been carried out by the European monetary union. However, as they expose, the manifestation of the Eurozone debt crisis has revealed a wide heterogeneity between core and periphery, questioning the strength of convergence.

Overall, regardless of the relationships established between the regions for the observed cycles, the definition of the cycles has occupied some attention among researchers due to the difficulty to pre-determine the timing of the different phases of the lifecycle. A Markov-switching autoregressive model to describe the stochastic process of growth in tourist arrivals is frequently applied to identify whether there exist common regime shifts for the various markets (see for instance Moore and Whitehall, 2005). In this sense, the most recognized cycling among the scientific community and considered

the official business cycle, is the proposed by the National Bureau of Economic Research (NBER), which uses an algorithmic approximation very similar to the one proposed by Hamilton (1999), based on a Markov-based regime-switching model applicable to time series obtaining series of regime probabilities produced a cycle chronology for US GDP data. In a similar approach, creating an algorithm to establish the cycles, Harding and Pagan (2003) proposed a simple non-parametric approach which has proven useful in establishing cycle chronology through GDP data, establishing similar findings to those of the NBER and Hamilton. In this sense, Gouveia and Rodrigues (2005) sustained that exist advantages in using an algorithmic approach to establish the dates at which turning points in a business cycle are present.

At this point, the importance of determining cycling in its incidence in tourist movements lies in the important political implications that emerge from these revelations. Moore and Whitehall (2005) affirm that one of the key policy implications of the cyclical tourism analysis is related to tourism demand phases reached proposing a greater effort in terms of investment and advertising in order to attract tourists from certain countries avoiding a destination entering the decline phases and thereby allow the implementation of appropriate counter-cyclical policies.

### 3.3. Econometric approach

Our approach follows the classical conception of business cycles aligned with the practice of National Bureau of Economic Research (NBER) and the classical business cycles literature, i.e. Artis et al. (1997) or McDermott and Scott (2000) and primarily, Harding and Pagan (2006).

Additionally, the classical business cycle measures impose the data filtering as prerequisite to any further step so, the Hodrick-Prescott standard calibration provides a basic aspect for band pass filters. This measure does not imply any series of parametrisation such as phase or cycle length, severity of recessions, etc. could be considered as being less biased, so about the trend in the analysed variables there are not dependencies on any assumption on it. This is an important issue because the trend is an unobservable component, which is subject to a higher degree of uncertainty as Artis et al. (1997) evidenced. Moreover, the classical cycle would be more relevant to policy-makers and the business community than the growth cycle (Pagan (1997a, b) and Harding and Pagan (2002)) due to the fact that its dating algorithm links with the Markov-switching time series model developed by Hamilton (1989) as Krolzig and Toro (2005) reveal.

We consider that the classical approach to dating business cycles give us more advantages because is more transparent, intuitive and the parameters

are clearly defined, for instance. For this reason, we apply an algorithm computerised and developed by Bry and Boschan (1971) to follow the methodology used by the NBER with a significant difference, we use the MBBQ algorithm which is adjusted for quarterly data and was developed by Harding and Pagan (2002). This algorithm follows two main steps:

First, it allows the identification of the local peaks and troughs finding the local minimum and maximum of economic activity. We establish a local peak in series  $y_t$  at date  $t$  when  $y_s < y_t$  for all  $s$  with  $t - K < s < t$  and  $t + K > s > t$  for a given  $K$ . We can define a local trough in a similar way.

Second, the selection of the points identified in the previous step which satisfy some requisites regarding minimum phase duration or minimum cycle duration, this is censoring the identified turning points. Censoring the turning points ensure that peaks and troughs alternate.

However, a requisite to identify the turning points is that the time series need to be smoothed. According to Gouveia and Rodrigues (2005), different methods of de-trending or filtering series have been considered in the literature but we choose TRAMO-SEATS filter.

Figures 1 – 7 present both the annual growth rate than the non-linear trends expressed by the TRAMO-SEATS filter, which is represented with the next equation. This filter also underlines the cyclical nature of the series, which allows the identification of peaks and troughs for each case.

$$y'_{k,t} = \ln(y_{k,t}) - \ln(y_{k,t-12})$$

As we said before, we apply a modified BBQ algorithm (MBBQ) in order to dating the business cycle and ensuring that peaks and troughs alternate properly, as is established in the second step of the methodology. To apply the MBBQ algorithm we need to choose some precise parameters as Grigoras and Stanciu (2016):

In order to establish a point as a turning point, window width (K) represents the number of periods of time.

Minimum duration of a phase (L): a phase cannot last less than L period.

Minimum duration of a complete cycle (C): a period can be defined as peak-trough-peak or trough-peak-trough sequence. One period cannot last less than C period.

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<sup>2</sup> These figures are shown in append 1.

Threshold parameter (U): we impose a minimum duration of a phase or a cycle. If the series analysed exceeds (declines) U%, then it is considered that the expansion (recession) has begun, in spite of the duration of the previous phase. It is recommended the transformation to logarithmic the variables in order to facilitate the application of the U parameter.

So, following the Bry and Boschan (1971), the phase must last at least 5 months ( $L=5$  for monthly data or  $L=2$  for quarterly data). The value associated to the window width (K) is the same as the minimum phase duration, therefore Bry and Boschan (1971) also considered that the minimum duration of a complete cycle is 15 months ( $C=15$  for monthly data or  $C=5$  for quarterly data). As it is well known, an extreme growth or decline rates would push the change of a phase, thereby the U parameter will have a large value. Once the dating procedure is applied, the business cycle can be summarised by a binary series, where the expansions period takes a value of 1 and 0 when there is a recession.

As we said previously, this algorithm provides binary variables,  $S_{it}$ , which will take values 1 or 0 if a given country is in expansion or recession. Hence, Harding and Pagan (2002) measure the business cycle synchronization between different variables using the concordance index:

$$IC_{ij} = \frac{1}{T} \sum_{t=1}^T \{S_{it}S_{jt} + (1 - S_{it})(1 - S_{jt})\}$$

This index denotes the proportion of time in which two variables, such as countries or regions, follow the same state of the economy. Whether the values are equal to 1, it means that both economies have the same phase during the whole period whereas if the economies take values equal to zero, we find the opposite meaning. Finally, pairwise distance on business cycle synchronization is obtained as one minus concordance indexes.

Being  $S_{it}$  and  $S_{jt}$  two dichotomous variables which state the business cycles of two series  $X_t$  and  $Y_t$  respectively in a period  $T$ , the expansions or recession could be highly correlated. This sets a problem in estimating the standard error of the correlation coefficient between them. Following Harding and Pagan (2006) we use a Generalised Method of Moments (GMM) framework in order to estimate Heteroskedasticity and Autocorrelation Consistent (HAC) standard error of the correlation coefficient.

Let  $\hat{\mu}_{X_t}$  and  $\hat{\mu}_{Y_t}$  be the estimated means, and  $\hat{\sigma}_{X_t}$  and  $\hat{\sigma}_{Y_t}$  be the standard errors. The means and standard deviations were estimated from the data and we introduce the moment conditions describing these estimators. To estimate the correlation coefficient ( $\rho_{XY}$ ) we will use the moment conditions:

In this perspective, we consider different features for each two phases of the business cycle: duration, amplitude, and excess. Duration manifests the average number of months between turning points. Amplitude measures the average increase in a given database, in this case, the flows of tourists during expansionary periods or the corresponding drop during recessions. Harding and Pagan (2002) determined the excess as the relative measure of the shape of expansions and recessions and show the actual course of time series between turning points against linear path. From a practical view, Camacho et al. (2008) noted that a convex actual path meet with positive values of excess and a concave path indicate negative values of excess. Thus, the excess of recessions, denoted by  $ER_i$ , is defined as the mean of the excess of each recession  $h$ , where  $T_{ih}$  is the cumulative gain or loss of recession  $h$ , which is obtained by the sum of all the amplitudes of each phase.  $M_{ih}$  represents the amplitude and  $A_{ih}$  is the triangle approximation  $0.5D_{ih}M_{ih}$ , being  $D_{ih}$  the duration. Then, the  $ER_i$  is defined as:

$$ER_{ih} = A_{ih} - T_{ih} + 0.5M_{ih}$$

According to Sichel (1993), we use another feature which is deepness that measures if the amplitude of troughs exceeds or not that of peaks. It can be achieved as the skewness of the cycle components. We denote  $C_t$  as the cycle component of the flows of tourists and,  $\bar{C}$  its sample average, and  $SC$  its standard deviation, the deepness coefficient is:

$$Ds(c) = \frac{1}{TS_c^2} \sum_{t=1}^T (C_t - \bar{C})^3$$

Also, Sichel (1993) proposes the steepness feature. This characteristic relates if contractions are steeper (or less steep) than expansions. This aspect could be obtained as the skewness of the first difference of the cycle component,  $\Delta C_t$  and is defined as:

$$Sl(c) = \frac{1}{TS_{\Delta c}^3} \sum_{t=1}^T (\Delta C_t - \Delta \bar{C}_t)^3$$

In order to draw conclusions from these pairwise distances is attracting, a complexity with it is that there are many such measures and it is a challenge to organize and present the results in a reasonable way. For this reason, we employ classical multidimensional scaling (MDS) aiming to project the pairwise economic cycle distances in a map in such a way that the distances among the regions plotted in the plane approximate the economic cycle dissimilarities (see Timm, 2002). In this map, regions which show high economic cycle dissimilarities have representations in the plane that are distant from each other. Thus, the aims of this analysis are to examine the extent to which our group of regions plays in distinct groups with similar cycles or to explore if some Spanish regions exhibits idiosyncratic cycles.

### 3.4. Data and Results

In this section we present the results obtained from the application of our econometric application described in the previous section. To this end, the data have been taken by FRONTUR from Instituto Nacional de Estadística (INE). We use the number of tourists by the region's main destination (Andalusia, the Balearic Islands, the Canary Islands, Catalonia, Valencia, Madrid and the rest of Spain). Time series have monthly periodicity and are available from 2000m1 to 2017m3. A summarize of the descriptive statistics are shown in append 1.

The set of results obtained will be presented in tables 1, 2, 3 and the figure 1. In table 1 appears the timing of the turning points derived to the application of the MBBQ algorithm. Analogously, the cycle features will be shown in table 2, also following the MBBQ algorithm proposed by Harding and Pagan (2003). For its part, the analysis of growth cycle synchronization appears in table 3. Finally, in order to understand the formation of potential subgroups, we plot the picture 1 in a multidimensional scaling (MDS).

At first glance, in table 1 we can see a 'heat map' analysis where are established the turning points concerning to such region, i.e. the different peaks and troughs which appear in different moments of time for the regions given. As it is well known, a turning point is an inflection point in which the

growth trend is changed passing from expansion to recession or vice versa. Indeed, a complete recession cycle will be characterized as peak-trough (PT) sequence and conversely, a trough-peak (TP) sequence will define an expansion cycle.

		Coincidence of Peaks (P) and troughs(T)																																																	
		2001			2002			2003			2004																																								
Andalusia		1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12		
Balearic								P																																											
Canary																																																			
Catalonia									T																																										
Madrid								P																																											
Rest																																																			
Valencia																																																			
		2005												2006												2007												2008													
Andalusia		1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12		
Balearic								P																																											
Canary																																																			
Catalonia																																																			
Madrid																																																			
Rest																																																			
Valencia																																																			
		2009												2010												2011												2012													
Andalusia		1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12		
Balearic																																																			
Canary																																																			
Catalonia																																																			
Madrid																																																			
Rest																																																			
Valencia																																																			
		2013												2014												2015												2016													



It is worth highlighting that the Great Recession manifests itself between the end of 2007 peaks and the middle of 2009 troughs for regions studied. This is a very important fact because our results of the MBBQ match with the estimates of NBER and CEPR's Euro Area Business Cycle Dating Committee. So, in this period the recession was a generalized process in the tourism flow to Spanish regions.

In addition, we can appreciate similar behaviour in years 2012 and 2013 which could link with the European sovereign debt crisis which affected to Spain among other countries these years. Therefore, we would interpret as a quasi-generalised recession. Regarding individual Spanish regions, dating of turning points exhibits a series of idiosyncratic recessions, thus facing more volatile business cycles.

In table 2 we obtain important information regarding the cycle's characteristics, this is the amplitude, duration, cumulative and excess. So, this results support that the amplitude in expansions and recessions is relatively symmetric. On average the maximum ascent of the cycle in expansions is 15.1, and the maximum descent in recessions is 14.5. Understanding these values we can affirm clearly that, on the one hand, the most volatile cycle emerge in Madrid and, on the other hand, the less volatile cycle appear in

Catalonia. Furthermore, in the observed amplitude in expansions are higher than in recession in all cases except in Balearic Island and Catalonia. Focusing on the average duration the values seems similar approximately to 17 months, although only Madrid become much longer than the average notably in expansions, where in recessions Andalusia keeps under average and Balearic Island over it. All in all, from the point of view of the duration of phases Spanish regions seem quite well synchronised.

Focusing to the Excess we can see how the results show positives and negatives values. In other words, the behaviour of the regions cycles display differences in the adjustment regarding the trend. Generally, in average, the tourism flow increases in expansions intensively and quickly in recessions. Attending to the phases of the cycle, on one side, in the expansion phase we find that the tourism flow increases intensively after the troughs (Canary Islands, Madrid and Rest of Spain). By contrast, tourism flow falls quickly after the peaks during recessions (Canary Islands, Rest of Spain and Valencia). In particular, Catalonia's case is remarkable, due to the fact that shows an increment intensively in expansion and quickly in recessions. Also, Madrid shows the quickest fallen in recessions.

**Table 2:** Cycle features

	Amplitude		Duration		Cumulative		Excess	
	Expansion	Recession	Expansion	Recession	Expansion	Recession	Expansion	Recession
Andalusia	13.8	-11.5	17.667	11.000	1.466	-0.698	0.298	-5.695
Balearic	12.9	-14.8	18.200	20.000	1.763	-1.299	9.103	-14.497
Canary Isl	19.7	-18.8	18.000	14.400	1.990	-1.476	-0.031	5.063
Catalonia	6.7	-7.4	15.200	18.800	0.485	-0.979	-4.333	-2.581
Madrid	25.8	-23.5	20.750	18.800	2.776	-3.032	-6.080	16.302
Rest	12.9	-12.8	15.600	15.167	1.105	-1.737	-6.269	5.273
Valencia	14.1	-12.9	14.500	17.000	1.806	-1.135	0.485	7.273
Average	15.1	-14.5	17.131	16.450	1.627	-1.479	0.975	1.591

**Notes:** Amplitude is the maximum gain in expansions or loss in recessions, Duration is the number of months in each phase, Cumulative is the gain or loss and consists of the sum of the amplitudes of each cyclical phase or total area described by the tourism flow, and Excess is the deviation of actual tourism flows from a linear path.

Table 3 reflects the results the synchronization by pairs. The highest coefficient is those existing among Rest of Spain with Andalusia and Valencian Community, all of them gets values around 65%. Whilst the pairs representing the lowest synchronization is found in Andalusia, Catalonia, Balearic Island and Valencian Community (less than 30%).

**Table 3:** Business cycle synchronization

	Andalusia	Balearic I.	Canary I.	Catalonia	Madrid	Rest
Balearic I.	0.462					
Canary I.	0.549	0.492				
Catalonia	0.395	0.554	0.569			
Madrid	0.513	0.569	0.492	0.451		
Rest	0.682	0.421	0.528	0.641	0.523	
Valencia	0.585	0.390	0.605	0.605	0.426	0.636

**Notes:** The entries show the pairwise concordance indexes of Harding and Pagan (2006).

Finally, a very interesting perspective about the synchronization is showed in figure 3, where in a multidimensional scaling (MDS) of cycle synchronization distances over the sample we can observe the information contained in previous table 3. First of all, differentiating into quadrants, we can observe different sub-markets, i.e. Madrid is presented alone, Balearic and Canary Islands appears in the same quadrant because they have a particular offer; Catalonia and Valencian Community are explained by proximity and finally, Andalusia and the Rest of Spain share quadrant. Also, others important patterns can be remarked due to the fact that the regions which show a lower level of synchronization, showed table 3, in this plot are closer among them.

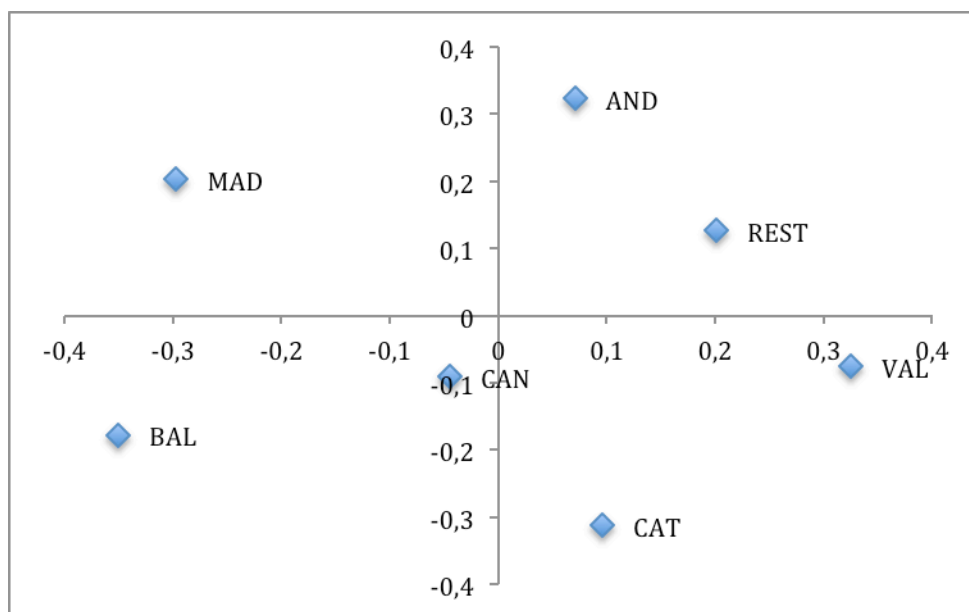


Figure 1: Business cycle synchronization.

### 3.5. Conclusions

The economic crisis has developed a deep debate concerning the effectiveness of economic policies. In the particular case of the EU, a great deal of effort has been made to achieve convergence among its member states and thus achieve economic development with some harmony. However, the particular characteristics of its member states have alienated the economic reality from those projections established by governments. Among the most important features in convergence, there have emerged in the last few decades a few elements that highlight these structural differences. In the particular case of Spain, tourism has a vital importance for economic development and in

this article we have explored the incidence of the economic cycle in the tourists inbounds by regions. In this sense, despite a large number of studies that have studied tourism demand from very different approaches, little attention has been paid to the analysis of behavior in the relationship between economic cycles and tourist demand.

This paper has revealed several interesting results in order to construct useful tools for policy makers. Firstly, we identify the turning points in order to study the main cycles in the Spanish tourism market, i.e. the cycle which matches with the financial crisis (2008) which affected to all the regions and a quasi-generalised cycle in the European sovereign debt crisis (2012). Despite difference patterns have been found in the Spanish tourism market, a general synchronization among them is determining its structure. More specifically, the features of the business cycle show that Catalonia and Madrid have some particular characteristics from the other regions. Overall, an effective policy must take into account not only the cycles and the heterogeneity of each region. Furthermore, our evidences support that there is a common tourism policy which could match with the particular tourism policy of each region. In this sense, whether policy makers would want to focus in this particular tourism policies, they must focus on Catalonia and Madrid because they lead the other regions.

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Append 1

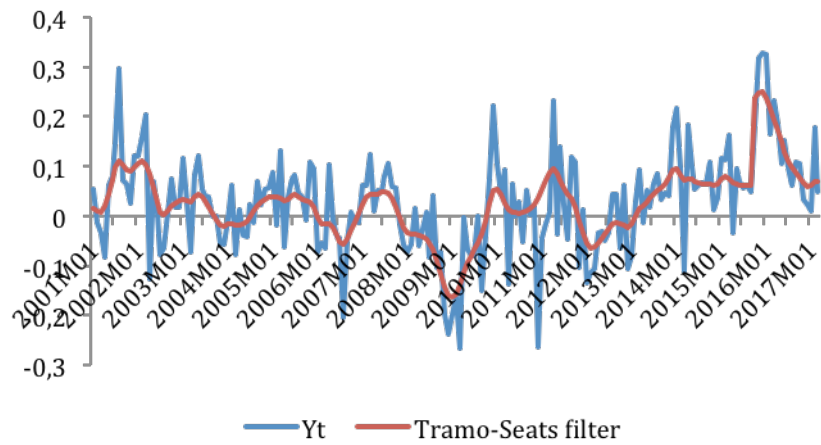


Figure 1. Non-linear trend of tourism flows to Andalusia.

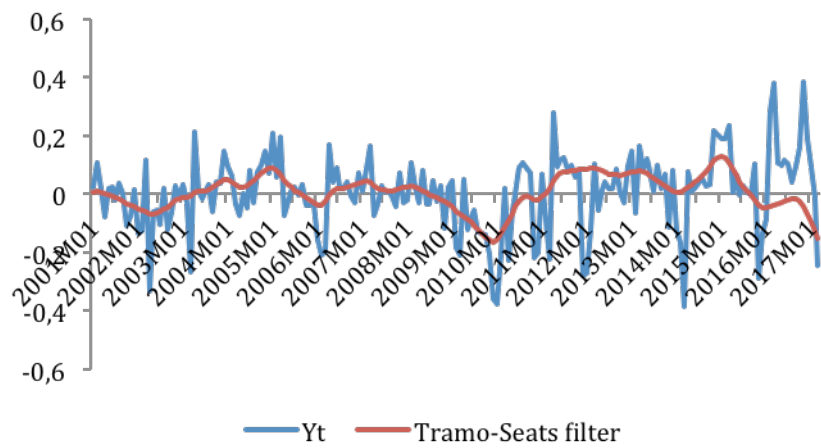


Figure 2. Non-linear trend of tourism flows to Balearic Islands.

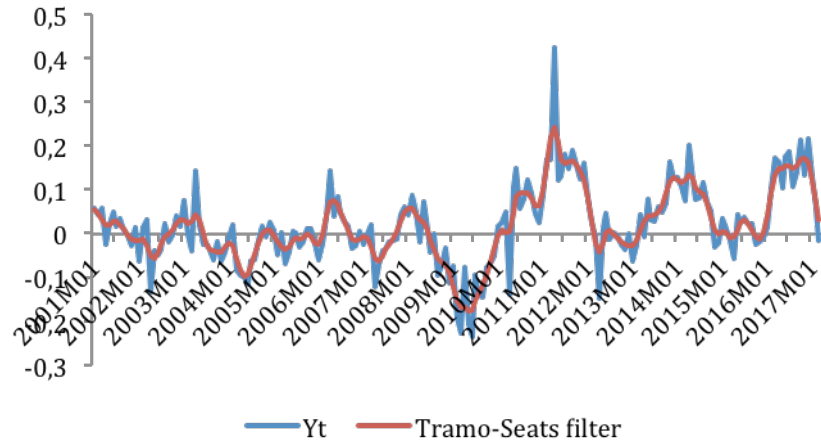


Figure 3. Non-linear trend of tourism flows to Canary Islands.

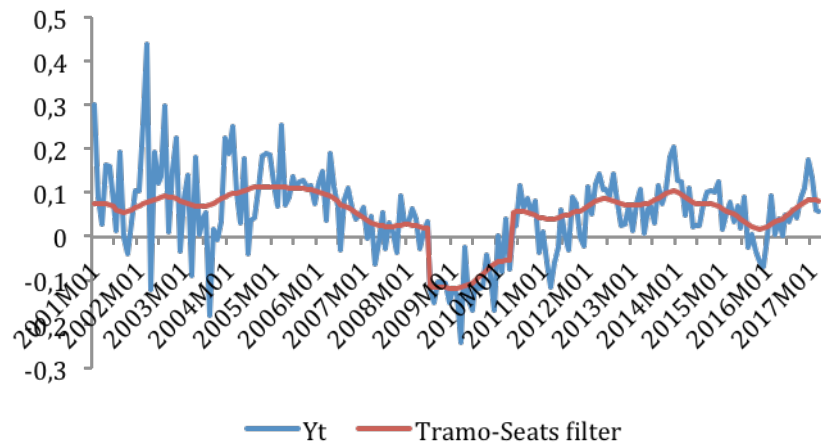


Figure 4. Non-linear trend of tourism flows in Catalonia.

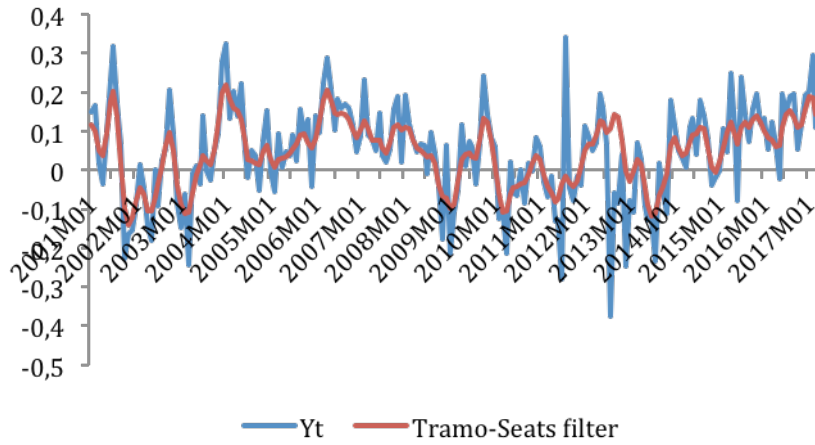


Figure 5. Non-linear trend of tourism flows to Madrid.

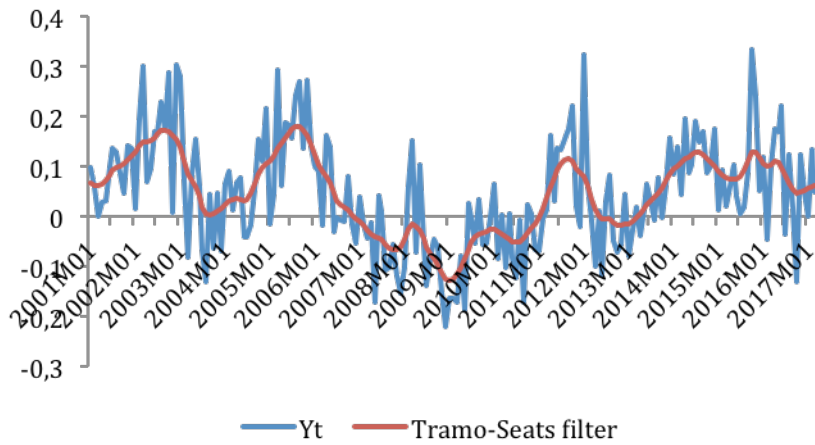
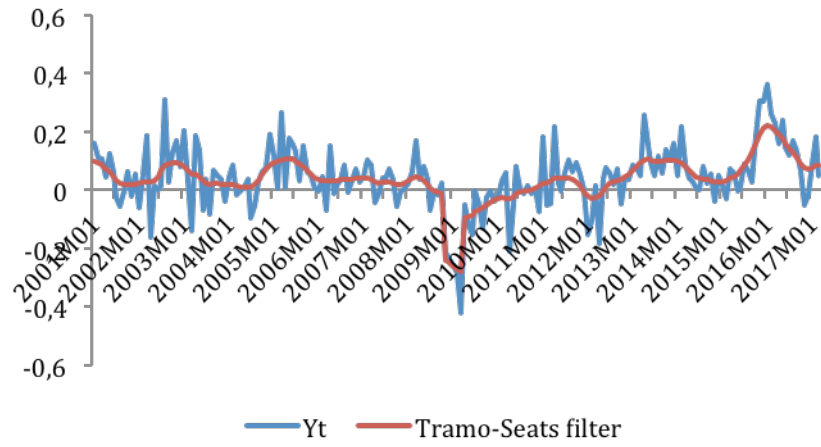


Figure 6. Non-linear trend of tourism flows to the Rest of Spain.



**Figure 7.** Non-linear trend of tourism flows to Valencian Community.

**PART III: SPANISH TOURIST MARKET.  
MICROECONOMETRIC APPROACH**

## **Chapter 4: Una caracterización del gasto turístico de los turistas internacionales.**

Este trabajo desarrolla un análisis del gasto realizado por los turistas no residentes que realizan algún tipo de estancia turística en España. Se hace uso de un modelo de regresión por MCO, en el que las variables controladas recogen información de características sociodemográficas y relativas al viaje.

Los datos utilizados provienen de la Estadística de Movimientos en Frontera y de la Encuesta de Gasto Turístico (FRONTUR y EGATUR)

El análisis muestra que las diferencias en la variable gasto para cada uno de los niveles de las variables controladas son significativos. Esta investigación proporciona valiosa información para la implementación de políticas turísticas en mercados cada vez más segmentados.

## 4.1. Introduction

La industria del turismo se ha convertido en un sector relevante a nivel mundial, suponiendo el gasto del turista una considerable contribución al crecimiento económico (Cortés Jiménez, 2008; Brida y Pulina, 2010; Figini y Vici, 2010; Paci y Marrocu, 2014). Tanto para la academia como para los profesionales el estudio de los factores que afectan a las decisiones de consumo de los turistas como el conocimiento de la medida en la que afectan, se ha convertido en tópicos de especial relevancia. El gasto turístico se torna en una de las variables de mayor importancia en un análisis del mercado turístico, ya que de ella se deriva directamente la rentabilidad de las empresas y agentes implicados en la industria turística, así como la contribución a las economías locales.

Una revisión de la literatura revela un gran número de estudios empíricos dedicados a medir las características y determinantes de la demanda turística, bien en términos de número de turistas o de su correspondiente gasto. Este interés se confirma en sendos artículos de revisión sobre los modelos de demanda turística (Song y Li, 2008) y sobre los determinantes del gasto turístico haciendo uso de microdatos (Brida y Scuderi, 2013)

Gran parte de estos estudios utilizan series de datos para estudiar la demanda. En un trabajo de Lim (1997) que realiza una revisión sobre los modelos demanda en el sector turístico, se pone de manifiesto que en un centenar de trabajos sobre la demanda de turismo internacional sólo nueve de ellos utilizan datos de corte transversal y otros nueve utilizan datos de panel, el resto hace uso de series temporales. Crouch (1994a, 1994b) encuentra que sólo el estudio de Mak, Moncur y Yonamine (1997) se basa en la información de una muestra de turistas de las que se recoge información de sobre las características de los individuos y de sus vacaciones. Por otro lado, los datos de corte transversal han sido usados en investigaciones sobre segmentación del mercado , tratando de identificar grupos homogéneos dentro de la población de turistas (Andereck y Caldwell 1994; Juaneda y Satre 1999). Este objetivo es similar en el estudio de Taylor, Fletcher y Clabaugh (1993) que investigan las características de los turistas en cuatro condados de Wyoming, dependiendo de si visitan lugares históricos y sus diferentes niveles de gasto.

Encontramos otros muchos trabajos que desde diferentes perspectivas apuntan a que la utilización de la segmentación del mercado y del nivel de satisfacción se convierten en instrumentos indispensables para el diseño de las políticas de marketing (Jeng y Feenmaier 2002; Middleton 1994; Inskip 1991)

Más recientemente y centrados en el comportamiento de gasto de los turistas nos encontramos con los trabajos de Agarwal y Yochum (1999) que analizan el comportamiento de gasto controlando el aspecto racial como un factor determinante.

Centrándonos en el territorio español, el trabajo de Aguló y Juaneda (2000) analiza el gasto en el turismo de masa a partir de los datos de una encuesta realizada ad-hoc entre los turistas que eligen como destino las Islas Baleares.

Nicolau y Mas (2005) utilizan el modelo de Heckit aplicado a datos transversales de una encuesta realizada por el Centro de Investigaciones Sociológicas. Por otro lado, los trabajos de Alegre, Mateo y Pou (2010, 2013) analizan varios aspectos de la demanda de turismo a partir de los datos de gastos en servicios turísticos utilizando la Encuesta de Presupuestos Familiares (EPF).

Este trabajo trata de analizar esta variable en una dimensión cross-section, buscando aquellas características que definen los diferentes perfiles de comportamiento atendiendo a características tales como el origen del turista, la época del año en la que viaja y el tipo de destino.

La metodología propuesta consiste en un modelo de regresión para el gasto turístico utilizando los microdatos procedentes de la Encuesta de Gasto Turístico (EGATUR) y Movimientos en Frontera (FRONTUR) llevada a cabo por el Instituto Nacional de Estadística(INE) durante el período comprendido desde octubre 2015 hasta marzo de 2017.

Estas operaciones estadísticas tradicionalmente a cargo del Ministerio de Energía Turismo y Agenda Digital pasan a desarrollarse por el INE desde octubre de 2015 con una metodología diferente, lo que hace que no podamos enlazar los datos más allá de octubre de 2015.

El modelo nos permitirá comprender los diferentes patrones de consumo por parte de los turistas a través de la observación e interpretación de los coeficientes asociados a cada una de las variables estudiadas.

## **4.2. Revisión de la literatura**

Haciendo uso de los datos obtenidos de la Encuesta de Gasto turístico podemos considerar que el nivel de gasto puede considerarse como una función de un conjunto de características individuales, ya sea propias del individuo o del destino elegido. La aproximación más generalizada a este tipo de

problemas planteados es la regresión lineal clásica a través de estimadores MCO.

Algunos estudios utilizan más de una variable dependiente para medir el gasto turístico (Agarwal & Yochum, 1999, 2000; Aguilo y Juaneda, 2000; Lehto et al., 2001; Wang et al, 2006). De estos estudios Aguilo y Juaneda (2000) diferencian el gasto de los turistas en función del país de origen para facilitar el estudio de la demanda de turismo en destinos de masa. Lee (2001) Leho et al. (2001) y Wang et al. (2006) desagregan los gastos del turista en alojamiento, alimentación, gasto destinado a las compras y transporte.

Zhang, Qu y Ma, (2010) enfocan su análisis en el gasto que realizan los turistas que acuden a exposiciones en China, a partir de una encuesta realizada a una muestra ad-hoc. Marcussen (2011) analiza los determinantes del gasto de los turistas en destino de Dinamarca, sobre una muestra de 11.000 individuos controlando un conjunto amplio de características desde la duración de la estancia, destino, modo de transporte, motivo del viaje, etc. En el trabajo de Svenson, Moreno y Martín (2011) se centran en el estudio de los factores que afectan al gasto realizado por los turistas cuyo destino es la Comunidad Autónoma de Andalucía, utilizando los datos proporcionados por el Instituto de Estadística de Andalucía, utilizando por tanto datos de corte transversal.

En cuanto a los regresores utilizados por la extensa literatura podríamos clasificarlos en factores económicos, socio-demográficos, factores relacionados con el viaje y psicográficos. A continuación presentamos los regresores más utilizados en la literatura.

Tabla 1: Variables explicativas

Económicos	Renta
	Origen de las rentas
	Relación de cambio
	Dificultades financieras
Socio-demográficos	Edad
	Educación
	Tamaño de la familia
	Estado civil y ciclo de vida familiar
	Nacionalidad, lugar de residencia, idioma
	Ocupación/profesión
Relacionados con el viaje	Raza, grupo étnico
	Alojamiento
	Actividades
	Coste
	Fuente de información para el viaje
	Duración de la estancia
	Tiempo de reserva
	Experiencias previas
	Duración de las vacaciones
	Distancias recorridas
Tipo de intermediario	
Motivo del viaje	

Fuente: Brida y Scuderi (2013)

El principal objetivo de este trabajo es establecer los factores que determinan el gasto de los turistas internacionales que visitan España, con el ob-

jetivo de incrementar el conocimiento sobre los mismos clave para cualquier política de promoción turística.

Los objetivos específicos se detallan a continuación:

- Determinar la composición de los turistas no residentes de acuerdo a las diferentes características que los definen.
- Identificar los principales predictores del gasto turísticos para los visitantes no residentes.

Las hipótesis planteadas son las siguientes:

*H<sub>1</sub>*: Las características geográficas (tales como la nacionalidad y el tipo de destino) influyen en el gasto de los turistas

*H<sub>2</sub>*: El motivo del viaje ayuda a predecir el gasto turístico.

*H<sub>3</sub>*: El tipo de alojamiento determina el gasto en las vacaciones.

*H<sub>4</sub>*: El momento en el que se realiza la actividad afecta al gasto turístico.

### **4.3. Metodología y modelo**

Para testar las hipótesis planteadas se han hecho uso de los microdatos de la Estadística de Movimientos turísticos en Frontera y la Encuesta de

Gasto Turístico (FRONTUR y EGATUR) llevadas a cabo por el INE. Estas operaciones se incluían dentro del Plan Estadístico Nacional 2013-2016 bajo la responsabilidad de la Secretaría de Estado de Turismo, pero tras la firma de colaboración entre Turespaña y el INE a partir de octubre de 2015 es este último organismo el responsable de la metodología, diseño de muestras y recogida de datos.

Entre los objetivos de estas operaciones estadísticas está medir el número de visitantes no residentes que llegan a España, conocer las principales características de los viajes que realizan y determinar el gasto de los turistas independientemente del origen o destino.

A través de estos datos pretendemos conocer las características principales que determinan el gasto de los turistas no residentes en España. Estas características vienen determinadas por destino principal, tipo de alojamiento, país de residencia, motivo de viaje, forma de organización del mismo.

La población de estudio de estas encuestas está formada por los no residentes en España que entran o salen de nuestro país habiendo realizado o no pernoctación y aquellos que pasan en tránsito (INE, 2015). Las unidades de análisis son los viajeros, los visitantes (turistas y excursionistas), los viajes y las excursiones. Se accede a estas unidades a través de un procedimiento de

muestreo polietápico a través del cual se llega a los individuos en los puntos fronterizos.

Presentamos a continuación los estadísticos descriptivos de acuerdo a las variables controladas en este estudio.

Tabla 2: Características controladas en el estudio

<b>Característica</b>	<b>Frecuencia</b>	<b>Porcentaje</b>	<b>Acumulado</b>
<b>origen</b>			
Europa	109,607	85.83	85.83
EEUU	3,806	2.98	88.81
Resto de América	5,869	4.60	93.41
Resto del Mundo	8,418	6.59	100.00
<b>motivo</b>			
vacaciones	86,135	67.45	67.45
trabajo	14,970	11.72	79.17
otros motivos	26,595	20.83	100.00
<b>estacionalidad</b>			
verano	24,748	19.38	19.38
semana santa	7,471	5.85	25.23
navidades	13,653	10.69	35.92
resto del año	81,828	64.08	100.00
<b>destino1</b>			
comunidades costa	109,822	86.00	86.00
comunidades interior	17,878	14.00	100.00
<b>destino2</b>			
Madrid	12,561	9.84	9.84
resto destinos	115,139	90.16	100.00
<b>destino 3</b>			
islas	34,390	26.93	26.93
península	93,310	73.07	100.00
<b>Total</b>	<b>127,700</b>	<b>100.00</b>	

En la tabla podemos observar como la mayor parte de los turistas que visitan España proceden de Europa (85.83%), viajan a España en su

mayoría por vacaciones (67.45%), no necesariamente en temporada alta (64.08%) y realizan su estancia en las comunidades autónomas de costa.

La literatura revisada proporciona información acerca de las características que podrían ser consideradas determinantes del gasto de los turistas no residentes en el territorio español, de forma que podríamos considerar que el desembolso que realizan los visitantes cuando acuden a España de vacaciones puede estar determinado por características tanto económicas, demográficas, psicográficas como las relacionadas con el viaje. En este trabajo, por la naturaleza de los datos recogidos en la Estadística de Movimientos en Frontera y la Encuesta de Gasto Turístico, sólo controlaremos características demográficas y las relacionadas con el viaje, de forma que podríamos expresar una función del gasto turístico según la siguiente expresión

$$gasto = f(\text{caract. demográficas, caract. del viaje})$$

Proponemos en este trabajo un modelo de regresión como el que sigue:

$$\log gasto_i = \alpha + \beta_1 origen_i + \beta_2 motivo_i + \beta_3 estancia_i + \beta_4 des1 + \beta_5 des2 + \beta_6 des3 + u_i$$

Donde,

*log gasto* es el logaritmo de la variable dependiente objeto de estudio en este trabajo.

*origen*: controla el efecto sobre el gasto (*ceteris paribus*) de la nacionalidad del visitante. En este caso la nacionalidad de los turistas es una variable que se ha recodificado a partir de la variable original recogida en la encuesta denominada país, y que recoge información sobre el país de residencia. Esta nueva variable recodificada toma diferentes valores en función de si el visitante proviene de Europa, Estados Unidos, resto de América o del resto del mundo.

*motivo*: esta variable recoge el motivo que inicia el viaje a España. La Encuesta de Gasto Turístico determina tres niveles de la variable, estos son, vacaciones, trabajo u otras razones.

*estac*: con esta variable tratamos de controlar el efecto de la estacionalidad en el desembolso del turista durante su estancia en España. Para ello se define como variable discreta que toma diferentes valores según la época del año en la que se realiza la estancia; esto es: verano (junio, julio y agosto), semana santa, navidades o durante el resto del año.

*des1*: examina el efecto del poder de atracción de las comunidades autónomas situadas en la costa, con respecto a las de interior.

*des2*: aísla el efecto de la Comunidad Autónoma de Madrid como destino Turístico.

*des3*: controla el efecto de las islas sobre la península.

#### 4.4. Resultados

En la siguiente tabla (tabla 3) se muestran los resultados de la estimación con los valores de los parámetros asociados a cada una de las variables controladas con su correspondiente valor del estadístico t.

Variables controladas	coeficientes (betas)	error estándar	estadístico t
<b>estacionalidad</b>			
verano		base	
semana santa	-.1035369**	.0074981	-13.81
navidades	-.050976**	.0065245	-7.81
resto del año	-.0826249**	.0040788	-20.26
costa	.3203276**	.0114134	28.07
capital	.2551378**	.0122026	20.91
islas	.2718695**	.0033095	82.15
<b>motivo</b>			
vacaciones		base	
trabajo	.0279439	.0055738	5.01
otras razones	-.1700619	.0048521	-35.05
<b>origen</b>			
Europa		base	
EEUU	.9605606	.0087278	110.06

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Resto América	1.093068	.0068809	158.86
Resto del mundo	.9424812	.0078984	119.33
_constante	6.367463	.0118875	535.64

\*\* significativos al 90% y al 95%

Los resultados muestran que los coeficientes incluidos en el modelo son conjuntamente significativos, de manera que podemos afirmar que las variables controladas ayudan a determinar el nivel de gasto turístico de los visitantes no residentes que deciden realizar una estancia turística en España.

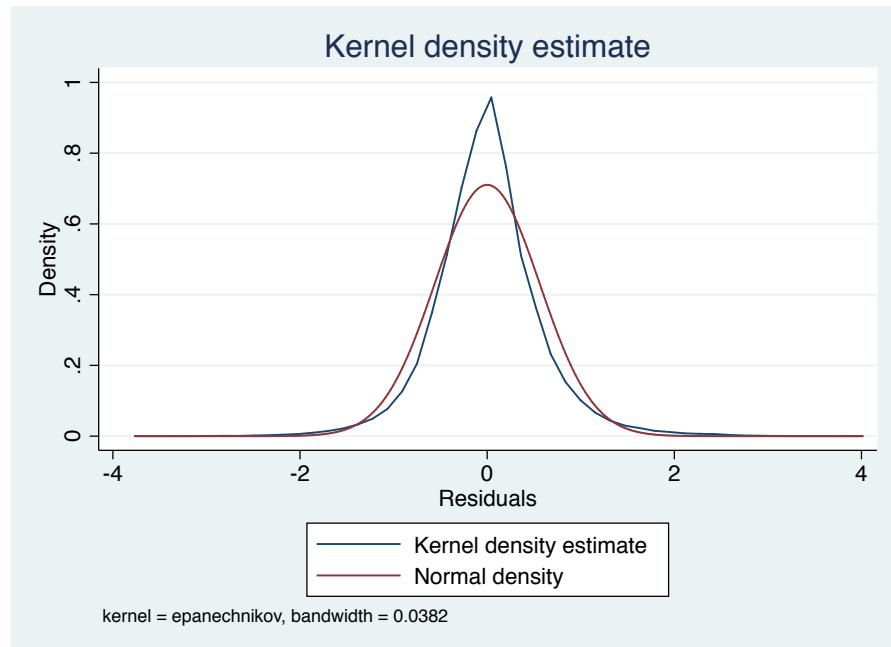
Analizando cada una de las variables de forma independiente podríamos asegurar que la propensión al gasto se reduce en los casos de que la estancia se realice en temporadas diferentes al verano. En otras palabras, el turista se encuentra más proclive a gastar durante los meses estivales.

Con respecto a las características del destino turística, cabría destacar que en las comunidades autónomas costeras existe un mayor desembolso por parte de los turistas, con respecto a las comunidades de interior. Centrándonos en los visitantes de las islas, cabe destacar que tienden a realizar un mayor desembolso en sus viajes que los que realizan su estancia en la península.

Por otro lado, la propensión al gasto por parte de los turistas, aumenta, aunque en menor medida, en los turistas que visitan la Comunidad de Madrid.

Controlando la variable que determina el origen, se evidencia que los turistas procedentes de países no europeos tienen una mayor tendencia al desembolso durante la duración de sus estancias.

Para asegurar una buena estimación hacemos uso del estadístico de Shapiro-Wilk para testar la normalidad de los residuos, hipótesis que aceptamos al 95% del nivel de confianza. Con este objetivo se presenta también el gráfico de distribución de los residuos  $u_i$  resultantes de la estimación del modelo planteado.



## 4.5. Conclusiones

Este trabajo considera que el gasto turístico es una variable clave en el análisis económico de costes y beneficios asociados a la industria del turismo, se argumenta que el estudio de esta variable debería ha de ser tomada en cuenta en la creciente complejidad que presenta la industria tanto desde el punto de vista de la demanda como de la oferta.

La principal ventaja del modelo planteado es que permite estimar el gasto medio realizado por los turistas en función de sus perfiles específicos y del destino elegido.

La metodología utilizada también permite ofrecer la posibilidad de predecir los cambios producidos en el gasto turístico cuando alguna de las características controladas se modifica. Esta sistemática permite entender que el análisis del turismo no se debe abordar sólo desde la perspectiva del número de visitantes que se reciben en un determinado destino turístico, sino desde una preocupación por la rentabilidad de estos destinos. Estos análisis coste – beneficio refuerzan la necesidad de estudios exhaustivos sobre qué parte del gasto turístico realizado por los visitantes revierte en las economías locales como ingresos turísticos. Se podría llegar a determinar un tipo de turista más rentable que la media incluso para los destinos turísticos de masas, que presentaran el mismo nivel de gasto comparables al tradicional turista de calidad.

Al mismo tiempo, la Administración Pública, que en muchos casos realiza campañas de promociones genéricas, podría identificar al grupo de turista con mayor propensión al gasto y dirigir de forma más eficiente sus campañas de comunicación sobre destinos turísticos.

Sería de gran valor poder contar con información de los gastos que realizan los turistas de forma desagregada, esto es, que las autoridades responsables de la recogida de información sobre datos relacionados con el turismo identificaran las partidas de gasto de los turistas internacionales según el destino de los mismos, ya sean de alojamiento, transporte, alimentación, actividades realizadas etc. Esto nos llevaría a poder realizar una identificación casi perfecta de los diferentes segmentos presentes en el mercado turístico.

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