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Research Paper

A comparative analysis of tourism destination demand in Portugal

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ABSTRACT

Tourism has experienced different levels of development in the different regions of Portugal. To frame this development, in this paper dynamic panel data models were estimated with the objective of explaining the evolution of international overnight stays in each region. Secondary data from 2000 to 2011 was used. The analysis includes the main tourism source markets for Portugal, such as the United Kingdom, Germany, the Netherlands, Ireland, France and Spain. The tourism literature suggests that, among others, the main determinants of tourism demand are income (GDP), household consumption, unemployment rate and the harmonised consumer price index. Per capita income, unemployment rate and final household consumption were identified as the most shared explanatory variables in each tourism region. However, in some regions, the high elasticity with respect to per capita income was confirmed, suggesting that tourism is a luxury good. It is observed that, although significant, the explanatory power of these variables varies according to the origin and the destination region considered. Findings suggest heterogeneous behaviour of the main international tourism demand by region. Furthermore, results also suggest some implications for public and private tourism authorities. Stakeholders can update the analysis, trends and forecasts of international tourism demand, put forward in the National Strategic Plan for Tourism for the period from 2013 to 2015, by taking into account the different macroeconomic variables that help explain international overnight stays in each region of Portugal.

1. Introduction

Tourism is an important social and economic phenomenon that follows a pattern of evolution which is important to understand. Applied economic research attempts to understand this pattern from an applied macroeconom(etr)ic, an applied microeconom (etr)ic, or even a mixed (micro- and macroeconom(etr)ic) perspective. The macroeconom(etr)ic perspective considers that tourism demand patterns are explained by economic and social conditions at an aggregate level (see, *inter alia,* Garín-Muñoz, 2006; Garín-Munõz & Amaral, 2000; Sakai, Brown, & Mak, 2000; Santana-Galleno, Ledesma-Rodríguez, & Pérez-Rodríguez, 2011; Seetanah, 2011), whereas microeconom(etr)ic approaches focus on variables at the individual level (see Brida & Risso, 2009; Massidda & Etzo, 2012; Surugiu, Leitão, & Surugiu, 2011). A mixed (micro and macroeconom(etr)ic) perspective has recently emerged; see, *inter alia*, Eugenio-Martín, Morales, and Scarpa (2004), Eugenio-Martín, Martín-Morales, and Sinclair (2008), Garín-Muñoz and Montero-Martin (2007), Leitão (2010), Naudé and Saayman (2005), Yang (2012), Yang, Lin, and Han (2010). However, there has been no clear-cut answer explaining the heterogeneous evolution of tourism demand, which therefore requires further research.

The traditional econometric approach typically used in the literature relies on ordinary least square (OLS) regression analysis. However, over recent years other econometric methods, such as, for instance, autoregressive distributed lag (ADL) models, error correction models (ECM), time varying parameter (TVP) models and almost ideal demand systems (AIDS) have been considered; see Song and Li (2008).

Panel data models have had less application in tourism analysis (Song & Li, 2008). In this paper, using dynamic panel data models we look to identify and analyse the determinants of international tourism demand for each tourism region of Portugal. In order to clarify our assumptions the UNWTO classification of International Tourism was adopted. According to UNWTO (1997), international tourists are defined as those travellers that cross a country's border. Indeed this criterion separates tourists by nationalities, which is useful for the purpose of our analysis as it allows us to distinguish between domestic and foreign tourists.

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The dynamic panel data models considered are estimated using the Generalized Method of Moments (GMM) approach proposed by Arellano and Bond (1991). Among other features, the use of panel data models presents several advantages. It allows us to control for individual heterogeneity, more variability and less collinearity between variables. Hence, given that the dataset used in the present study is a short panel (short time period and many individuals), (Cameron & Trivedi, 2010), panel data methods prove useful as they allow for more reliable estimation. The model proposed allows for the identification of the main macroeconomic determinants of demand. Their contribution rests on explaining the volume of overnight stays by the six major international markets in the seven tourism regions of Portugal. Based on the number of overnight stays in hotels, tourist resorts and apartments, over a period of twelve years (2000–2011), we found that macroeconomic variables have a positive or negative impact on current international demand for each tourism region of Portugal.

The rest of the paper is organized as follows. The next section contextualizes the tourism demand pattern in Portugal in terms of international overnight stays between 2000 and 2011. Section 3 summarizes the tourism demand studies mainly concerning the applications of econometric models and in particular panel data models. Section 4 presents the econometric methodology and the data set considered in the present research. The empirical results for each region are provided in Section 5 and 6 presents a discussion of the results. Finally Section 7 summarizes and presents the conclusions, limitations and perspectives for future research.

2. Contextual setting

Portugal, in terms of international tourism, received 26 million overnights in 2011, which correspond to 66% of total overnights in Portugal (Turismo de Portugal, IP, 2012). However, six of the major international tourism source markets, such as the United Kingdom (UK); Germany (GER); the Netherlands (NE), France (FR), Ireland (IR) and Spain (SP) have presented a decreasing trend since 2000 (see Fig. 1).

Considering the essential role that the tourism sector plays in the national economy (in 2011 tourism consumption in Portugal was 9% of GDP), the analysis of the tourism demand pattern is essential to enact a sustainable development. Although a decreasing trend seems to be observed in all markets, as illustrated in Fig. 1, this tendency is not homogeneous when the focus of analysis is at the regional level. Table 1 shows that the main markets present different demand patterns by region.

While in the Algarve and Lisbon the British market decreased on average 2%, in the Azores Islands this market shows a tendency to increase by around 4%. Concerning the German market a decrease is observed in the Algarve (which registered an average growth of -7%). However, in the Centre, North and Azores Islands this market reveals a tendency to increase, registering average growth rates of 4%, 2% and 9%, respectively. The Dutch market shows a clear average growth in the Azores Islands of around 26%, which represents, in absolute size, an increase from 4.462 overnight stays in 2000 to 55.503 overnight stays in 2011. This behaviour is also observed in the Centre, Alentejo and North (Turismo de Portugal, IP., 2012). The analysis of the Irish market reveals a tendency to increase in all regions (particularly the Centre) of Portugal with the exception of the Algarve. Specifically, the Centre registered an average growth rate of 31% in the Irish market, which represented an effective growth overnight stays in absolute terms, from 2016 in 2000 to 39.348 in 2011 (Turismo de Portugal, IP., 2012). Concerning the French market an increasing trend in all tourism regions of Portugal is observed. Finally, the Spanish market also shows positive behaviour in every Portuguese region, although it is important to note that this increase is more evident in the Azores Islands (17%), Algarve (12%), Centre (11%), North (7%) and Alentejo (7%). These results suggest that tourism demand needs to be analysed at the regional level to account for specificities of each tourism market.

3. Literature review

Tourism demand refers to the consumers' willingness to buy different amounts of a tourism product at different prices during a period of time (Dwyer, Forsyth, & Dwyer, 2010). This willingness is constrained by the availability of time and money to spend on vacations. Tourism is a complex decision wherein several determinants contribute to explain tourism demand. Middleton, Fyall, and Morgan (2009) summarize the main determinants in nine factors: economic factors; comparative prices; demographic factors; geographic factors; socio-cultural attitudes to tourism; mobility; government/regulatory; media communications; and information and communication technology. Income factors particularly were used in many empirical studies that adopted econometric models to measure tourism demand elasticities. Findings showed that the income elasticity of tourism demand, especially for international demand, is positive and above one. Typically, economic products with such elasticities are perceived as luxury goods, as posited by Crouch (1995), Lim (1997) and Smeral (2012).

Tourism demand's main determinants support the explanation of why the populations of some countries have a high propensity to participate in tourism, whereas the populations in others show a small propensity to travel (Vanhove, 2005).

In terms of quantitative methods, Surugiu et al. (2011) indicated that tourism demand has been studied using simple and multivariate regressions; see Allen and Yap (2009), Garín-Munõz and Amaral (2000), Luzzi and Fluchiger (2003). The use of panel data methods presents several advantages. As stated by Ramos and Rodrigues (2013), it allows one to control for individual heterogeneity, to consider more information, more variability, less collinearity between variables; it provides more degrees of freedom and greater efficiency and allows one to study the dynamic adjustment process. It also allows for the identification and measurement of effects that simply are not detected in data that are purely temporal or cross-sectional, and it allows for small samples.

The literature review that follows focuses mainly on studies which have attempted to generate international tourism demand elasticities by using dynamic panel data models. Extending the work of Song and Li (2008) we partially updated their literature review, finding several studies that modelled tourism demand using dynamic panel data models. According to Song and Li (2008) this method has rarely been applied to tourism demand analysis.

Since 2010, most recent studies have tested the relationship between tourist arrivals and GDP, relative prices, distance, population, exchange rate and several dummy variables, which account, among others, for wars, diseases, economic and social crises (see, *e.g.*, Deng and Athanasopoulos, 2011; Falk, 2010; Görmüs & Göçer, 2010; Ibrahim, 2011; Leitão, 2010, 2011; Massida & Etzo, 2012; Ouerfelli, 2010; Rodríguez and Rivadulla, 2012; Seetanah, 2011; Seetaram, 2012, 2010; Surugiu et al., 2011; Töglhofer, Eigner, & Prettenthaler, 2011). These studies have explored the relationship between the former variables and tourist arrivals. The results available highlight the dynamic nature of tourism demand; see Seetaram (2010). Seetaram (2010) used dynamic panel data cointegration techniques to determine the elasticities of tourism arrivals in Australia. The results show that tourism demand in

Australia is inelastic concerning all independent variables used in the study (income, price and air fares).

Leitão (2010) applied static and dynamic panel data models to tourism demand in Portugal and estimated demand equations using tourism inflow data for the period from 1995 to 2006. Results suggest that trade, population and income are the main determinants of tourism demand to Portugal, rather than relative prices.

Concerning research carried out in 2011, Massidda and Etzo (2012) investigated the main determinants of Italian domestic tourism demand as measured by regional bilateral tourism flows using dynamic panel data procedures. Results showed differences at the aggregate level and at the sub-sample level. However, for Italian tourists, domestic and international destinations act as substitutable goods. Santana-Galleno et al. (2011) introduced static and dynamic models to analyse both long- and short-run relationships for OECD countries. A good agreement is generally found between tourism and trade in both long- and short-run relationships for the OECD countries. Seetanah (2011) investigates the potential contribution of tourism to economic growth and development in 19 countries (island economies) using a dynamic panel data model. The results of the study suggest that tourism development is an important factor that explains economic performance in island economies. Surugiu et al. (2011) used static and dynamic panel data analysis to investigate the impact of specific factors across countries on tourism demand in Romania. The results show that per capita GDP, trade and population have a significant positive influence on international arrivals. The study conducted by Töglhofer et al. (2011) examined the impacts of snow conditions on tourism demand in 185 Austrian ski areas over the period 1972/1973 to 2006/2007. In addition to time-series regression models, the authors also used static and dynamic panel data models. The findings showed a positive relationship between overnight stays and snow conditions in the majority of areas. Deng and Athanasopoulos (2011) modelled Australian domestic and international inbound travel using an anisotropic dynamic spatial lag panel Origin-Destination (OD) travel flow model. These authors modelled tourism behaviour as travel flows between regions. This study was the first that formally incorporated both temporal and spatial dynamics into tourism demand modelling. Results showed that spatial patterns are found to be most significant during peak holiday seasons. Di Lascio, Giannerini, Scourcu, and Candela (2011), applied a panel data analysis to study the relationship between cultural tourism and temporary art exhibitions in 52 Italian provinces over the period 2003–2007. Findings show that temporary art exhibitions contribute to increasing tourist flows if they are part of a structural characteristic of a destination. Based on a panel data analysis, another study was conducted by Ibrahim (2011) who used a dynamic demand model for tourism in Egypt in order to identify and estimate income, tourism price and trade value elasticities of tourism demand. Results showed that tourism in Egypt is very sensitive to price. Rey, Myro, and Galera (2011) estimated the impact of low-cost airlines on Spanish tourism during the first decade of the 21st century, looking at tourist traffic from the main EU-15 member states using a dynamic panel data model. Results suggested that, a rise in number of visitors travelling by low-cost airlines would increase the average number of tourists from EU-15 countries. Finally, Keum (2011) proposed a dynamic econometric model for the causal analysis of panel data in order to examine bilateral tourism and trade flows between Korea and its 21 trading partners worldwide over a 12-year period. Results suggested that policies aimed at stimulating international human interchange may lead to an increased goods trade.

Finally, from a summary of studies carried out during the first half of 2012, it is possible to identify a few papers that used dynamic panel data models. Dritsakis (2012) suggested an analysis of the relationship between economic growth and tourism development in seven Mediterranean countries. Results showed that there is solid evidence of panel cointegration relationships between tourism development and GDP in the case of the seven Mediterranean countries under consideration. In light of this, tourist receipts have a higher impact on GDP in all seven Mediterranean countries. Concerning studies that tested the relationship between tourist arrivals and other macroeconomic variables, it is possible to highlight the studies by Rodríguez and Rivadulla (2012) and Seetaram (2012). The former analyses the main determinants of international tourism demand in Spain through the estimation of a dynamic panel data model. Results suggested a high fidelity of visitors to the destination and the economic conditions of visitors seemed to be very significant in determining international tourism demand. Regarding the second study by Seetaram (2012), a dynamic demand model is developed and estimated. The author suggested a model that uses, income, own price, price of a substitute destination, airfare and immigration as explanatory variables in order to explain international tourism arrivals in Australia, provided from 15 main markets for this country. Hence, the objective was to estimate the relationship between immigration and inbound tourism. The results also confirm that demand is dynamic, as evidence of a relationship between immigration and inbound international tourism to Australia was found.

Tourist arrivals/departures is the dependent variable most frequently used in international tourism demand models (Lim, 1997). However, international tourism demand is often measured either through tourist expenditure or the number of overnight stays by tourists in the destination country (Ibrahim, 2011; Ouerfelli, 2008). Concerning the explanatory variables, Lim (1997), Song and Li (2008), Surugiu et al. (2011) and Ramos and Rodrigues (2013), summarized most variables typically used in tourism demand models. In this paper, we consider a dynamic panel data model for the number of international tourist nights in each region of Portugal in order to identify the main macroeconomic determinants of this demand as well as their elasticities.

4. Methodology

The main objective of this paper is to determine and analyse the main international tourism demand factors of the seven tourism regions of Portugal. The proposed model of analysis is a dynamic panel data model, which was applied to a panel data set collected from seven tourism regions (Alentejo, Algarve, Azores, Centre, Lisbon, North and Madeira) in Portugal from 2000 to 2011. The data consists of annual overnight stays of international tourists, such as Irish, British, Dutch, German, French and Spanish in these regions. These markets represent more than 85% of the total overnight stays of international tourists in Portugal.

Concerning the set of variables used in the panel data model, as previously mentioned, tourism demand is measured in terms of the number of overnight stays of international visitors in hotels, apartments and resorts in the seven tourism regions of Portugal. The explanatory variables used were per capita income (per capita GDP), relative real prices, unemployment rate and final household consumption.

The data for the number of overnight stays of international tourists in hotels, apartments and resorts in each of the seven tourism regions of Portugal between 2000 and 2011 was collected from the official statistics of the Tourism Institute of Portugal (TIP). The annual data for per capita income (per capita GDP), relative prices, unemployment rate and final household consumption was obtained (years of 2000 and 2011 were included) from the EUROSTAT for each of the six main international demand markets for Portugal.

4.1. Model specification and estimation

According to the variables previously indicated, the tourism demand function considered is,

$$\mathrm{OVER}_{i,t} = f\,(\mathrm{PCGDP}_{i,t},\ \mathrm{UNP}_{i,t},\ \mathrm{HICP}_{i,t},\ \mathrm{FHC}_{i,t}) \quad (1)$$

where, i represents the country of origin and t the year. $\Delta = 1 - L$, is the first difference and L is the conventional lag operator. α, is a constant which is different for each country of origin. $OVER_{i,t}$, is the number of overnight stays of tourists from country i in year t. $OVER_{i,t-1}$, is the lagged dependent variable. $PCGDP_{it}$, is real annual per capita GDP of country i in year t. UNP_{it}, is the unemployment rate in country i in year t. $HICP_{it}$, is the harmonised consumer price index of country i in year t., FHC_{it}, is final household consumption of country i in year t.

According to Morley (1998) if the impact of past tourism is neglected, the effect of the relevant variables will tend to be overestimated (since the estimated coefficients will involve direct and indirect effects). Thus, a dynamic panel data model was estimated. The problem of small sample validation for the simple estimation procedures of panel data models may arise as the number of years available is relatively small ($T=12$). To solve this problem the GMM approach of Arellano and Bond (1991) was applied, *i.e.*, the following model was estimated:

$$\begin{aligned}\Delta\ln\mathrm{OVER}_{i,t} = {} & \alpha_i + \beta_1 \Delta\ln\mathrm{OVER}_{i,t-1} + \beta_2 \Delta\ln\mathrm{PCGDP}_{i,t} \\ & + \beta_3 \Delta\ln\mathrm{UNP}_{i,t} + \beta_4 \ln \Delta\mathrm{HICP}_{i,t} + \beta_5 \Delta\ln\mathrm{FHC}_{i,t} + \Delta\varepsilon_{i,t}\end{aligned} \quad (2)$$

In this type of dynamic models, this methodology offers asymptotically normal and consistent estimates of the parameters. The interpretation of the estimated coefficients as elasticities is possible due to the double-logarithmic form of the model (Rodríguez & Rivadulla, 2012). It should be noted that the results presented at the top of Table 2 are short-run demand elasticities. Therefore, in order to obtain long run elasticities, it is necessary to divide each of the estimated coefficients of the explanatory variables considered by the autoregressive component, excluding deterministic.

The adoption of the proposed macroeconomic determinants is supported by the following assumptions. Per capita GDP (PCGDP) is one of the variables typically used in estimating tourism demand, and its sign corresponds also to the purchasing power parity hypothesis, spending ability and the standard of living in the countries of origin. Several studies reveal and confirm that for GDP the expected sign is positive, showing that tourism needs to be seen as a luxury good (Crouch, 1995; Seetaram, 2012; Smeral, 2012; Stabler, Papatheodorou, & Sinclair, 2010). In several studies, unemployment (UNP) is a proxy of an individual political risk index (see Eilat & Einav, 2004; Sequeira & Nunes, 2008). This index includes components as well as government stability and socio-conditions (unemployment, consumer confidence and poverty). Thus, we individualized the unemployment variable, because of its increasing pattern in the international tourism markets to Portugal during the period under analysis.

Concerning the price indices variable, the harmonized consumer price index (HICP) was considered. Relative prices were used in several studies (see, *inter alia*, Allen & Yap, 2009; Eilat & Einav, 2004; Garín-Muñoz, 2009; Garín-Munõz & Amaral, 2000; Habibi, Rahim, Ramchandran, & Chin, 2009; Hanafiah & Harun, 2010; Leitão, 2010; Rodríguez; Martínez-Roget, & Pawlowska, 2012; Song & Fei, 2007; Surugiu et al., 2011) to analyse international tourism demand using panel data models. As suggested in several studies, relative prices influence and reduce tourism demand. For instance, since a negative sign of the coefficient is to be expected, an increase in this variable reduces the number of tourists (Garín-Munõz & Amaral, 2000; Leitão, 2010; Seetanah, 2011).

Concerning final household consumption (FHC), in a first approach its relationship with income is clear. However, according to Eurostat (2012), (COICOP categories at two-digit level, ESA95 Annex IV, the new transmission programme—Regulation (EC) No 1392/2007), this indicator is an aggregate of consumption which incorporates, among others, consumption in recreation, culture, restaurants and hotel services.

5. Results of the study

This section presents the estimation results of the dynamic model, which are reported in Table 2. Since, in the literature, less attention has been paid to dynamic models of tourism demand (Brida & Risso, 2009), more attention will be paid to the analysis of the results based on the Arellano-Bond estimator to allow for the interpretation of elasticities of international tourism demand in each tourism region of Portugal.

The variable $\ln \mathrm{PCGDP}_{i,t}$ presents different behaviour according to each Portuguese tourism region. In the reviewed studies this variable normally presents a positive sign (Eilat & Einav, 2004; Garín-Munõz & Amaral, 2000; Leitão, 2010; Maloney & Montes Rojas, 2005; Seetanah, 2011; Surugiu et al., 2011). In fact, the Centre, North and Azores Islands show a positive sign. As regards the Azores Islands and Centre region, the estimated coefficient for this variable has a value which is higher than 1, so we can conclude that travelling to those regions is considered by international tourists as a luxury good. Concerning long-run elasticities, tourism for the Azores and North regions is very dependant on the economic situation of the countries of origin. In the other regions the estimated coefficient is not significant, suggesting that per capita GDP does not influence tourism demand.

Concerning relative prices, $\ln \mathrm{HICP}_{i,t}$, the negative sign of the coefficient is the expected one, because an increase in this variable reduces the number of tourists (Garín-Munõz & Amaral, 2000; Leitão, 2010; Seetanah, 2011; Seetanah, Durbarry, & Ragodoo, 2010). The short-run estimated price elasticity for Lisbon is -0.7311 suggesting that international demand is price inelastic. Thus, we may conclude that a 1% increase in tourism prices will lead to a fall of around 0.73% in arrivals, *ceteris paribus*, thus implying that relative price is an important factor. However in the long run (-1.3875) international tourists show themselves to be more price sensitive. Consequently, the industry must pay attention to price competitiveness, because this price sensitiveness may be a reflection of the demand for alternative destinations. In the other regions the estimated coefficient is not significant.

Regarding the unemployment rate, results show that the sign is negative for Madeira. Following this result, an increase of 1% in the unemployment rate in the international tourism markets will result in a decrease of 1% for the Madeira Island in international overnight stays. In other regions, such as Alentejo, Lisbon and Centre, the short-run estimated coefficient is also significant; however, the sign is positive.

The variable $\ln \mathrm{FHC}_{i,t}$ has a positive impact for the Algarve, Alentejo, Lisbon and Madeira. In this way it is possible to quantify a positive effect on overnight stays when the final household consumption in the international tourism markets increases. A first attempt to compare the short-run results shows that Madeira (1.8682) has the highest value when compared to Lisbon (1.0851), the Alentejo (0.6180) and the Algarve (0.4498). According to these estimates, international tourism to Madeira and Lisbon seems to behave as a luxury good. However, in the long-run it is more than evident that international tourism demand for Algarve (1.4953), Lisbon (2.0594) and Madeira (3.2598) is very dependant on the economic situation of the origin countries. For the other regions the estimated coefficient is not significant. The results gathered by

some regions of Portugal, provided by the dynamic model, particularly concerning GDP and the final household consumption variables, are in line with what numerous studies evidence (*e.g.*, Crouch, 1995; Maloney & Montes Rojas, 2005; Smeral, 2012). The demand for international tourism is elastic concerning available income, *i.e.* tourism consumption assumes the features of a superior or even a luxury good for the cases where the elasticity is above one, as are the cases of Algarve, Lisbon, North, Azores and Madeira.

To conclude, the lagged dependent variable reports different coefficients in each tourism region of Portugal. Comparing the estimated coefficients, we observe that the result achieved by the Algarve (0.6992), suggests that around 70% of total international overnight stays are attributable to international visitors that persist in repeating their visit to this region, which shows evidence of strong loyalty to this destination. Finally, the data analysis and results allowed us to identify a relation between overnight stays in hotels, unemployment, income (GDP), relative prices and final household consumption.

6. Discussion

Previous results are important to set new policies in tourism management. The main findings that may feed new policies are the following: international tourism demand is heterogeneous and this suggests that Portugal has quite different tourism products attracting different markets. In several regions, the high elasticity with respect to per capita income was confirmed, suggesting that tourism in Portugal may assume the features of a luxury good, suggesting a high economic potential. Furthermore the regions of Centre and Azores evidence several increasing slopes concerning the average growth rate (between 2000 and 2011) for the Irish (31%) and the Dutch (26%) tourists. However, in the Algarve it was possible to identify long-run elasticities above one which give this region the status of a major luxury tourism destination, at least for the international tourists visiting Algarve. On the other hand British and German tourists show a decreasing pattern of overnight stays, which may be due to the long relation these markets have with Portugal. Generally other variables were identified as important explanatory factors. Per capita income, unemployment rate and final household consumption were identified as the most shared explanatory variables in each tourism region, suggesting that monitoring the macroeconomic variables of international markets should drive the strategic plans for tourism in Portugal.

For a deeper understanding of international tourism demand, the analysis needs to go beyond micro- and macroeconomic variables, since there are social and psychological determinants of choice that these models are not able to explain. As stated by Kahneman and Tversky (1979) human behaviour is not so rational and exactly economic. On the other hand, tourism, as Pearce and Lee (2005) asserted, seems not to assume a standard of consumer behaviour, because each tourist seeks an experience and above all the realisation of a dream. In this way, in different countries explanatory variables may have different influences.

Changes in international tourism demand are influenced by several factors. Nevertheless almost all studies focus on economic factors in order to estimate satisfactory cause-effect relations (Lim, 1997). In the present study, estimations are based on a previous recognition of the current situation and focus on tourism demand in Portugal, where the main international markets have always been very dynamic, with even those who repeat their visit saying there is still plenty to discover (Correia, Pimpão, & Crouch, 2008).

Table 1
International overnight stays in Portugal per region.
Source: Turismo de Portugal, IP. (2012)

Countries regions	Average annual growth (%) 2000–2011					
	UK (%)	GER (%)	NE (%)	IR (%)	FR (%)	SP (%)
Algarve	−2	−7	0	0	9	12
Alentejo	2	−3	4	11	3	7
Lisbon	−2	−2	2	11	3	1
Centre	6	4	5	31	8	11
North	−1	2	3	8	8	7
Azores	4	9	26	5	1	17
Madeira	0	0	2	7	7	6

7. Conclusion and implications

The objective of this study is to explain the evolution of international overnight stays in each region of Portugal. In this paper, the determinants of international tourism demand in Portugal and in seven Portuguese tourist regions were identified. The analysis includes the main tourism source markets to Portugal, such as the United Kingdom, Germany, the Netherlands, Ireland, France and Spain, and the macroeconomic explanatory variables used are income, household consumption, unemployment rate, and relative prices from 2000 to 2011 for the former international markets in each of the seven tourism regions of Portugal, representing 85% of the total overnight stays of international tourists in Portugal.

Table 2
Estimation results of the dynamic model of international tourism demand (2000–2011).

Variable	Portugal	Algarve	Alentejo	Lisbon	Centre	North	Azores	Madeira
ln $OVER_{i,t-1}$	.5769 (0.000)	.6992 (0.000)	.3617 (0.003)	.4731 (0.00)	ns	.5767 (0.000)	.4883 (0.000)	.4269 (0.000)
ln $PCGDP_{i,t}$	.3748 (0.000)	ns	ns	ns	3.5203 (0.000)	.9097 (0.000)	2.9159 (0.000)	ns
ln $HICP_{i,t}$	ns	ns	ns	−.7311 (0.012)	ns	ns	ns	ns
ln $UNP_{i,t}$	ns	ns	.2132 (0.001)	.1124 (0.04)	.4243 (0.044)	ns	ns	−.1468 (0.007)
ln $FHC_{i,t}$	ns	0.4498 (0.004)	.6180 (0.007)	1.0851 (0.00)	ns	ns	ns	1.8682 (0.008)
cons	2.3616 (0.029)	ns	ns	ns	−25.554 (0.001)	−4.4509 (0.015)	−24.9202 (0.000)	ns
Wald test	132.81	205.25	64.18	87.80	35.70	133.78	205.46	90.25
# of obs.	60	59	58	58	59	60	60	58
Long run parameters								
ln $PCGDP_{i,t}$	.8858					2.1490	5.6985	
ln $HICP_{i,t}$				−1.3875				
ln $UNP_{i,t}$			0.3340	0.2133				0.2562
ln $FHC_{i,t}$		1.4953	0.9681	2.0594				3.2598

Notes: Figures outside parentheses are coefficients and in parentheses are the corresponding *p*-values. ns indicates not significant. The effects are measured in per capita terms.

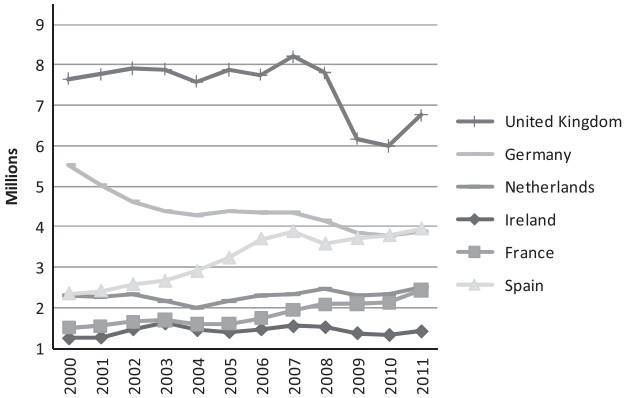

Fig. 1. Total overnight stays in Portugal by place of residence 2000–2011.
Source: Turismo de Portugal, IP. (2012)

The contribution of this study rests on the better understanding of international tourism demand for each of the seven tourism regions in Portugal, through the identification of different macroeconomic determinants that explain the international tourism demand for each region and also the elasticity estimates. The results obtained in this paper suggest that international tourism demand has different patterns depending on the region, and that their basis is underpinned by an origin market with similar social and economic features. Moreover, international tourism demand for Portugal is dynamic. Another main conclusion of this study is the coefficient estimate of the lagged dependent variable for Portugal (0.57) and Algarve (0.69), which may be interpreted in terms of high loyalty of consumers. Concerning theoretical implications, generally these results are in line with previous studies (*e.g.* Leitão, 2010; Rodríguez & Rivadulla, 2012; Seetaram, 2012; and Surugiu et al., 2011). However, to understand international tourism demand in Portugal and specifically in each region of the country, further research is necessary.

This study has some limitations. Future research should include more years and other international markets that are emerging in Portugal, such as Brazil and Russia. A further important contribution is to set up models that allow an exploration of how motivations have influenced tourists' choices over the last eleven years in Portugal.

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Appendix A

See Tables 1 and 2 and Fig. 1

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