

THE WORLD TOURISM EXPORTS CYCLE*

Pedro M.D.C.B. Gouveia** | Raúl Filipe C. Guerreiro** | Paulo M.M. Rodrigues***

ABSTRACT

Considering that tourism is an important industry on a global scale, this study analyses and compares the deviations cycles from the long-term trend of tourism exports for all regions of the world with the cycle of the European Union with 27 member states (EU27). In this context, the approach followed allows us to analyse and determine the synchronization between tourism exports cycles of various regions of interest. In parallel, lagged concordance indices of cycles are identified which can play an important role in forecasting and used as an important tool to support decision making of public and private entities associated to the tourism industry. In methodological terms, this paper is based on work originally developed in the literature by Gouveia and Rodrigues (2005), who analyse the tourism demand cycle following the method proposed by Harding and Pagan (2001) and obtain evidence of a strong degree of synchronization between the economic and the tourism cycle. This paper is innovative in the approach used to investigate the relationship between tourism exports cycles and in the identification of the trend and cycle components through the application of state-space methods and the Kalman filter (Kalman 1960, Kalman and Bucy, 1961).

1. Introduction

A characteristic of industrialized economies is the transition between periods of expansion and recession. The understanding of such fluctuations has received particular attention in economic literature since the pioneering work of Burns and Mitchell (1946). Recently there has been a growing interest in the study of tourism exports in terms of its growth and its relationship with the economic cycle.

The economic dependence of some countries on the tourism sector may have implications on the behavior of the economy and in particular on its economic growth and development (see, *inter alia*, Eugenio-Martin, Morales and Scarpa, 2004 and Andraz, Gouveia and Rodrigues, 2009).

According to the World Travel and Tourism Council [WTTC] (2013), the direct contribution of Travel & Tourism to global GDP in 2012 was 2.1 trillion USDollars. However, its total contribution, which includes direct, indirect and induced effects, reached 6.6 trillion USDollars, representing around 9.3% of world GDP. Additionally, this contribution can also be quantified in terms of generated employment. Indeed, taking into account the direct, indirect and induced effects, this sector is associated with 9.1% of total employment in 2012 (WTTC, 2013).

Given the importance of tourism as a major industry and its importance for a wide range of other activity

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** ESGHT, Universidade do Algarve.

*** Banco de Portugal, Economics and Research Department.

sectors, this paper analyzes and compares the tourism exports cycles from all regions of the world. In this context, the approach considered allows us to analyze and determine the synchronization between tourism exports cycles of various regions of interest and identify the lagged concordance index of cycles. Identification of these characteristics play an important role in anticipating/predicting tourism exports cycles and are an important tool to support the decision making process of public and private tourism-related organizations.

Over the past decades business cycle behaviour has been implicitly taken into account in tourism demand models. The explanatory variables commonly used are e.g. disposable income, price levels, and exchange rates and their dynamics (see, *inter alia*, Collins and Tisdell, 2004, Lim and McAleer, 2002 and Andraz, Gouveia and Rodrigues, 2009).

Despite of the extensive literature on tourism demand in terms of growth and main determinants, little can be found on the approaches for the decomposition of tourism exports in trend and cycle and identification of turning points, the study of synchronization and the identification of possible lag effects between cycles.

Available research has been based on the original work of Gouveia and Rodrigues (2005), who address tourism demand cycles following the method proposed by Harding and Pagan (2001), who introduced the concordance and the recursive concordance indices. Based on this methodology, Gouveia and Rodrigues (2005) provide strong evidence of synchronization between the tourism and the economic cycles, and identify delay effects between the two. A recent study of Guizzardi and Mazzocchi (2010), which uses unobserved components models, also concludes that tourism demand has a lagged relationship with the global economic cycle.

The methodology used in this article follows the approach of Gouveia and Rodrigues (2005) and is based on the decomposition of tourism exports time series in trend and cycle components. In contrast with the approach taken by Gouveia and Rodrigues (2005), the trend and cycle are identified through the application of state-space methods and the Kalman filter (Kalman 1960, Kalman and Bucy, 1961).

The main objective of this study is to understand and analyze the synchronization of tourism exports cycles of various regions (and countries) of the world with the tourism exports cycle of the European Union with 27 member states (hereafter EU27). It is interesting to note that the methodology followed in this paper allows us to characterize the various tourism exports cycles in terms of synchronization, to identify lags between cycles, and to study the correlation between the cyclical components of several pairs of regions and / or countries. In this sense, we considered the five most important countries in terms of tourism exports in each region of the world¹ (these countries and their respective weights are identified below in Table 2).

The series analyzed refer to annual tourism exports data, expressed in billions of USDollars at constant 2011 prices. The regions considered are the Caribbean, the European Union, Latin America, the Middle East, North Africa, North America, North-East Asia, Oceania, South Asia, South East Asia and sub-Saharan Africa.

The reference variable considered in the empirical analysis of the tourism exports cycles' synchronization was the EU27 tourism exports cycle. This choice stems from the fact that the EU27 corresponds to the main region in terms of tourism exports worldwide (WTTC, 2013).

Although traditionally cyclical analysis is developed based on quarterly (or monthly) data, in this article annual data is considered (see also Giannone, Lenza and Reichlin, 2008). The recurring pattern of ups

¹ Note that in the case of EU27 besides the 5 countries with the highest weights in terms of tourism exports, we have also considered the tourism exports for Portugal.

and downs in annual data is less intense than that observed in quarterly (or monthly) data. However, the use of annual data has the advantage of allowing for an historical perspective of the cycle analysis. Indeed, the use of annual data avoids measurement errors and, despite the short-term information loss, data at an annual frequency seems more reliable when the purpose is to establish robust facts about the real economic activity.

The remainder of this paper is organised as follows. Section 2 describes the methodology used in the data analysis; Section 3 presents a brief review of the events that affected tourism exports in the period under analysis as well as a discussion of synchronization, correlation and lag effects between cycles. Finally, Section 4 presents the main conclusions.

2. Cycle Synchronization

2.2. The concordance index and the correlation coefficient

The methodology proposed by Harding and Pagan (2001) allows for the measurement of the degree of synchronization between two cycles based on the concordance index. This index measures the percentage of time that two cycles are in the same phase. The level of agreement between two regions x and y (CI_{xy}) is given by the following expression:

$$CI_{xy} = \frac{1}{T} \left\{ \sum_{t=1}^T I_{x,t} I_{y,t} + \sum_{t=1}^T (1 - I_{x,t})(1 - I_{y,t}) \right\} \quad (1)$$

where the indicator function of the tourism demand cycle in a particular region or country is defined from the cycle's turning points, *i.e.*,

$$I_{j,t} = \begin{cases} 1 & \text{if recession} \\ 0 & \text{if expansion} \end{cases} \quad (2)$$

with j = region x or region y .

The method proposed by Harding and Pagan (2001) ensures cycle phases with a minimum duration of τ periods, taking in this way the persistence property of the economic cycle into consideration. The maximum delay order can be viewed as a censoring rule to ensure a duration and amplitude of the phases of the cycles. Harding and Pagan (2001) apply this algorithm for business cycle dating using US GDP data and the results reached are similar to those obtained by the NBER and Hamilton (1989). This non-parametric method is a simple procedure, which has the advantage of being transparent and reproducible, and represents therefore a useful tool for obtaining information about cycles.

With the purpose of obtaining additional information about the contemporary relationship between the cyclical components of tourism exports, we also used Pearson's correlation coefficient,

$$\rho_{xy} = \frac{\sum_{t=1}^T (C_{x,t} - \bar{C}_x)(C_{y,t} - \bar{C}_y)}{\sqrt{\sum_{t=1}^T (C_{x,t} - \bar{C}_x)^2 \sum_{t=1}^T (C_{y,t} - \bar{C}_y)^2}}$$

In this case, when this coefficient is close to 1 it indicates perfect cyclical convergence, while when it is close to -1 cycle divergence is suggested.

2.2. The recursive concordance index

The $CI_{x,y}$ introduced in Section 2.1 allows us to analyze the synchronization of tourism exports cycles between regions and countries. However, it does not allow for an analysis of the evolution of the synchronization over time. This limitation led to the development of a complementary indicator, which was designated by Gouveia and Rodrigues (2005) as recursive concordance index. This index allows us to obtain the percentage of time that two cycles coexist in the same phase until time t ($t = 1, \dots, T$) and is given by the following expression:

$$R_{\text{CR}_{x,y,t}} = \frac{1}{t} \left\{ \sum_{i=1}^t I_{x,t} I_{y,i} + \sum_{i=1}^t (1 - I_{x,i}) (1 - I_{y,i}) \right\} \quad (3)$$

where $I_{j,i}$ was previously defined in (2).

2.3. The lagged concordance index

In order to complement the $CI_{x,y}$, in the context of the possible existence of non-contemporaneous relationships between cycles, the lagged concordance index is introduced. This index is given by the expression,

$$L_{\text{CR}_{x,y,d}} = \frac{1}{T} \left\{ \sum_{t=1}^T I_{x,t} (I_{y,t-d}) + \sum_{t=1}^T (1 - I_{x,t}) (1 - I_{y,t-d}) \right\} \quad (4)$$

where d represents the lag order of C_t (the variable representative of the cycle).

The importance of this index lies in the fact that it allows for the quantification of the percentage of time that two cycles are in the same phase, one of which is lagged d time periods. This version of the concordance index allows us to identify advanced tourism demand cycles by comparison with cycles in other regions or countries.

3. Empirical Analysis

3.1. The world tourism cycle and its crises

The tourism industry is often described as a "fragile" industry, susceptible to various types of disturbances (shocks), such as wars, disease outbreaks, terrorist attacks, economic fluctuations, currency instability and energy prices, which unfortunately arise with some frequency all over the world (Neumayer, 2004).

During the period under analysis in this text (1985 - 2011) many of these negative events occurred, some of them more focused in a particular region or in several regions, and others with a more global impact, resulting therefore in different influences on the global evolution of the tourism exports cycle.

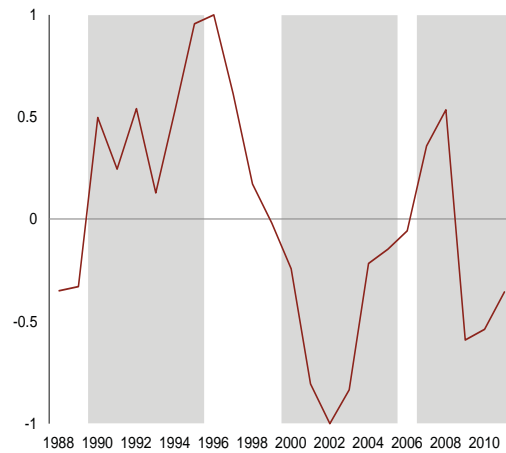
In Chart 1 we identify three major periods of crisis: 1) between 1990 and 1995, 2) between 2000 and 2005 (with roots in the second half of the 90s), and 3) from 2007 to the present day. We will briefly describe the main events of each of these sub-periods below.

It is important to note that the impact of these crises was heterogeneous across regions and countries. This may be seen in Chart 2, where one can observe the cyclical developments of regional tourism exports, and in Chart A.1 in the Appendix the cyclical changes in the EU27 reference countries' tourism exports cycles.²

² Relatively to the other countries considered, their respective cycles can be obtained from the authors.

Chart 1

WORLD TOURISM EXPORTS CYCLE



Source: Authors' Calculations.

Note: For a graphical comparison of the cycles we opted for the normalization of the values of the series. In this study, the normalized values, x_t^* , are defined within the closed interval from -1 to 1, i.e., $x_t^* = \frac{2(x_t - x_{\min})}{x_{\max} - x_{\min}} - 1, t = 1, \dots, T$

As a complement to the cyclical developments of the regional tourism exports cycles presented in Chart 2, we can further analyze in Table 1 the rates of annual tourism exports growth for the three aforementioned periods (1990-1995, 2000-2005 and 2007-2011).

3.1.1. 1990 – 1995

The period between 1985 and 1989 was a period of expansion, partly due to a positive supply shock which occurred in 1985, resulting from the decline in oil prices. However, as can be seen from Chart 1, in the early 90s there was a decline in the world tourism exports cycle, which suffered two recessions between 1990 and 1995.

This period coincides with the first Gulf War (August 1990 - February 1991), which played an important role in the decline of tourism demand, especially in the Middle East and North Africa (Neumayer, 2004). From Table 1 it is observed that these two regions recorded negative growth rates in 1991, and that in general (with the exception of Northeast Asia) all other regions experienced a significant slowdown.

However, Europe was at this time also entering a difficult period. In 1992, one of the worst crises of the European Monetary System took place. This crisis resulted in the expulsion of the pound and the lira from the Exchange Rate Mechanism (ERM), and the devaluation of the peseta and other currencies.

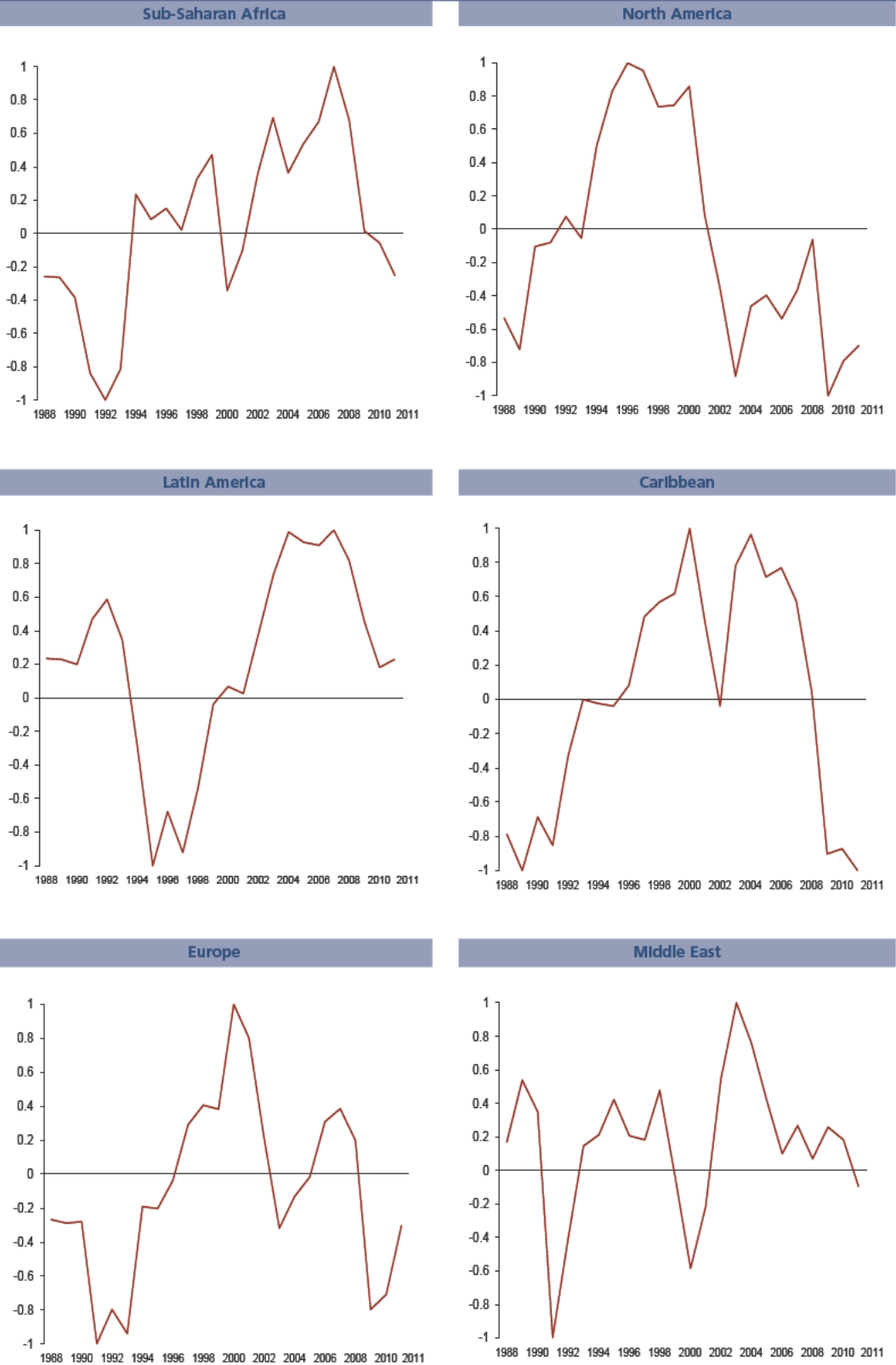
In 1993, negative growth rates of tourism exports in the EU27 and in Europe (Table 1) are observed. This negative growth is particularly important in Portugal in 1994 (-8.8%) and in Spain in 1993 (-5.1%).

Although we have only focused on the first half of the 1990s, this decade will also be remembered for the severity of the crises that have affected Mexico in 1994, East Asia in 1997, and Brazil and the Russian Federation in 1999. In particular, the second half of the 1990s marked the beginning of a long decline of the world tourism exports cycle (Chart 1).

The Asian financial crisis, which appeared to be a regional event, with time proved to be the “first great crisis of the global markets.” Asia was affected by a decrease of demand and of confidence throughout the region. In 1997 and 1998, Northeast Asia, Oceania and Southeast Asia exhibited negative rates of annual tourism exports growth.

Chart 2 (to be continued)

TOURISM EXPORTS CYCLES BY REGION

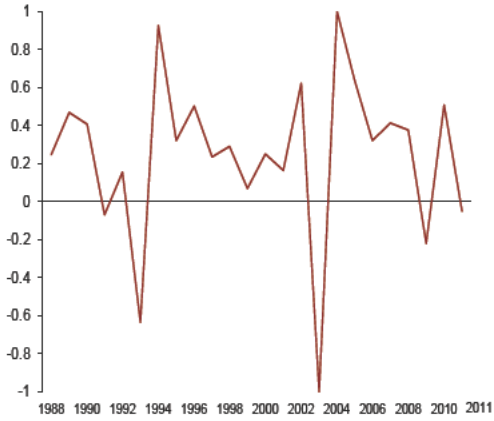


Sources: World Travel and Tourism Council and Authors' Calculations.

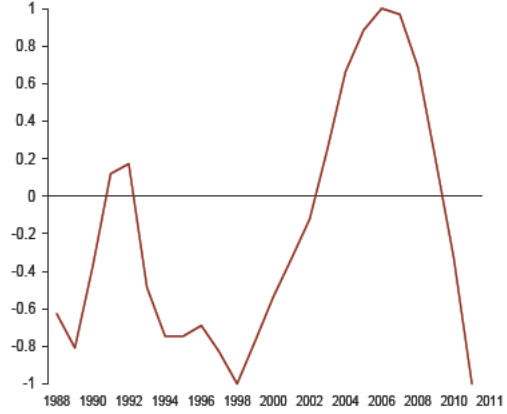
Chart 2 (continued)

TOURISM EXPORTS CYCLES BY REGION

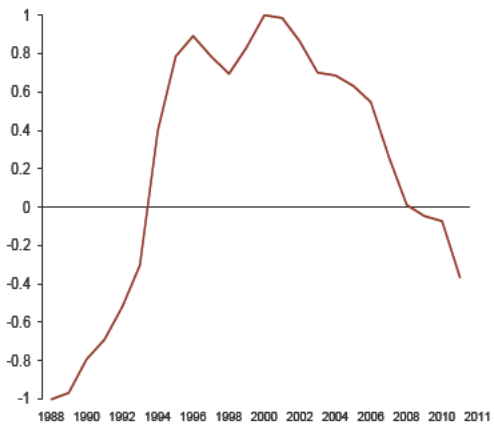
Northeast Asia



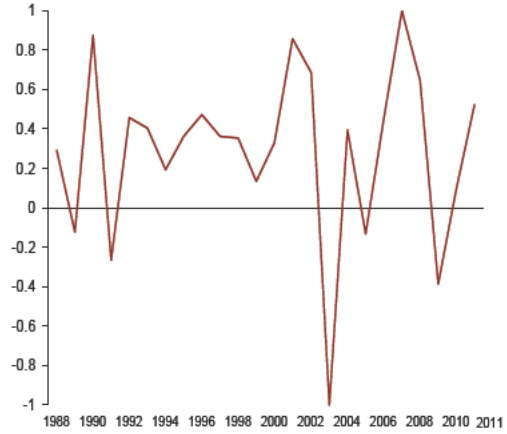
North Africa



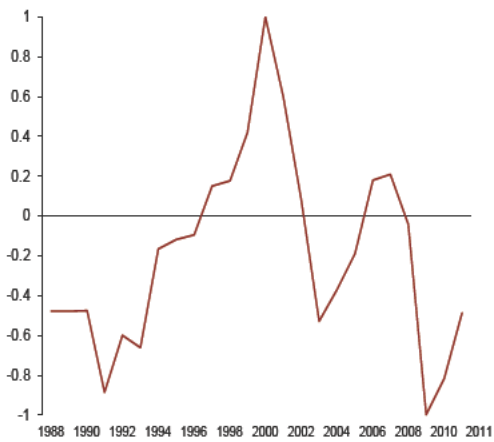
Oceania



Southeast Asia



EU27



Sources: World Travel and Tourism Council and Authors' Calculations.



Table 1

TOURISM EXPORTS GROWTH BY REGION OF THE WORLD

Regions	1990	1991	1992	1993	1994	1995	2000	2001	2002	2003	2004	2005	2007	2008	2009	2010	2011
Caribbean	11.00%	2.70%	8.90%	10.80%	6.10%	7.00%	7.70%	-1.10%	-1.60%	7.90%	8.00%	8.50%	4.50%	1.40%	-7.70%	6.30%	5.20%
Europe	29.20%	0.90%	12.10%	-5.00%	13.60%	17.30%	-1.10%	-0.70%	5.60%	17.60%	16.90%	6.60%	14.80%	9.60%	-13.60%	0.80%	12.30%
EU27	31.40%	1.70%	13.70%	-5.60%	12.90%	17.30%	-2.30%	-2.20%	5.40%	15.90%	16.40%	5.80%	13.90%	7.50%	-13.90%	0.00%	11.80%
Latin America	18.30%	9.90%	11.30%	5.40%	-3.90%	6.70%	5.30%	-3.10%	-8.70%	14.40%	18.70%	17.10%	17.90%	12.40%	-5.60%	11.10%	13.50%
Middle East	8.40%	-12.20%	24.30%	18.00%	12.70%	19.10%	7.70%	7.80%	22.40%	22.10%	9.70%	12.00%	19.30%	20.30%	-1.30%	12.90%	11.60%
North Africa	2.70%	-10.40%	35.60%	-24.60%	17.90%	18.00%	4.80%	2.60%	1.60%	13.90%	29.00%	15.50%	20.60%	14.30%	-7.50%	8.30%	-14.20%
North America	23.00%	9.00%	9.50%	3.60%	16.40%	8.60%	8.80%	-10.20%	-4.70%	-3.50%	16.40%	9.70%	10.80%	12.60%	-15.30%	10.80%	8.10%
Northeast Asia	2.20%	5.80%	14.50%	12.20%	17.90%	17.00%	10.40%	3.70%	11.60%	-0.50%	35.20%	11.50%	14.20%	14.80%	-0.20%	18.30%	8.70%
Oceania	11.80%	6.50%	5.90%	4.50%	42.20%	21.50%	1.80%	-3.10%	6.70%	16.70%	17.30%	7.70%	6.20%	-1.80%	-5.60%	20.50%	4.40%
Southeast Asia	29.40%	0.10%	26.60%	12.40%	12.40%	19.60%	9.10%	3.00%	5.50%	-10.40%	28.60%	4.80%	28.40%	7.00%	-12.60%	22.50%	19.90%
Sub-Saharan Africa	15.20%	2.20%	9.90%	2.00%	28.10%	16.40%	-10.50%	4.10%	10.50%	41.60%	17.00%	14.10%	17.80%	3.50%	-8.20%	14.00%	8.10%

Sources: World Travel and Tourism Council and Authors' Calculations.

In August 1998, Russia replaced the Asian markets in the centre of the crisis. The Russian economy came under increasing pressure since the intensification of the Asian crisis in October 1997. These pressures reflect, among other factors, the financial contagion in Asia and the adverse implications of falling oil prices on Russia's external balance.

In 1999, Argentina also began an economic decline due to a combination of factors: a) internal - high unemployment and fiscal imbalances, and b) external - the Russian crisis in 1998, the impact of the devaluation of the Brazilian currency in 1999, and the large risk aversion in international financial markets.

The effects of tourism exports contraction resulting from these crises are observable at the beginning of the XXI century in Latin American countries (Table 1).

3.1.2. 2000 – 2005

This period is marked by a series of major events that have had significant negative impacts on international tourism. Among these are the terrorist attacks of September 11, 2001 in the US. The negative growth rates of tourism exports seen in Table 1, particularly in 2001 and 2002, may be a reflection on tourist flows of the fears associated with terrorism. These fears proved to be particularly strong in North America, the Caribbean and the EU27.

The contribution of Travel and Tourism in industrialized and developing countries is now so great that any slowdown in the level of activity is a cause for concern. The repercussions extend beyond activities directly related to tourism, including airlines, hotels and catering, to sectors that provide intermediate or final goods. This means that all sectors of the economy are affected to a greater or lesser extent (see, among others, Araña and León, 2008).

Additionally, other events had different impacts on different regions and countries of the world and hindered the growth of tourism in the countries directly affected, as well as in neighbouring countries and regions (see Edmonds and Mak, 2005). Among these events it is important to highlight the invasion of Afghanistan (October 2001), the Bali bombings (October 2002), the Severe Acute Respiratory Syndrome (SARS) (November 2002), the war in Iraq (Spring 2003), the attacks in Madrid (March 2004), the Indian Ocean tsunami (December 2004) and the London bombings (July 2005). The consequences of these events had different magnitudes and occurred in various regions and countries. These results are documented in Chart 1. An interesting result that can be observed from Chart 1 is that the joint impact of these events on the world tourism demand cycle, seems to have been more severe than the current financial crisis.

During this period, the air transport sector was severely affected. The global economic crisis and rising oil prices led to the bankruptcy of major airlines, with consequent impact on other tourism businesses. Terrorism has been understood as a psychological warfare, and has consequently generated short distances tourist flows. The second Gulf War contributed to the worsening of the situation and led to a drastic rationalization of the tourism industry. In this context, there is a change in behaviour of western tourists who present this time a lower propensity to travel long distance fearing the consequences of the Iraq war, and the months of unrest and repeated terrorist attacks against tourists (e.g. in Bali, Kenya and Tunisia). Simultaneously there was an opposite effect in countries like Switzerland, Vietnam and New Zealand, which were considered safe and which benefited from substitution effects from affected regions.

Besides the Gulf War and the terrorist attacks, the SARS outbreak, which began in China in November 2002, and quickly spread around the world (in August 2003 reached 29 countries and three regions) aggravated the situation. The areas most affected were China, Hong Kong, Taiwan and Singapore, countries with a significant weight in the region in terms of tourism exports (Table 2). The impact was so strong that the World Bank predicted that output growth in East Asia would fall by 1 percentage point in 2003.

3.1.3. 2007 – 2011

Countries around the world have been severely affected by the economic and financial crisis that originated in the summer of 2007. This crisis also had a strong impact on the tourism industry (Smeral, 2009, 2010, and Barda and Sardianou, 2010), and it can be observed that many tourist destinations have shown negative growth rates and overall world tourism was severely affected (Chart 1), forcing countries and regions to make changes in this sector (Hall, 2010 Pizan, 2009, 2010, Papatheodorou, Rosselló, and Xiao, 2010, Song and Lin, 2010, 2011).

During 2008 the world economy was faced with a volatile and unstable situation. The tourism sector which seemed to resist the crisis in comparison to other sectors, such as, construction, real estate or automotive industry, recorded an overall slowdown in growth. According to *INE* (2008), the performance was also conditioned by other factors, such as,

- the military conflicts in Iraq, Afghanistan, Pakistan, Palestine, Sri Lanka and India, highlighting the Mumbai terrorist attacks in November 2008;
- the climatic problems, such as the floods in China, Myanmar, Brazil, Mexico and the UK, the heat waves and fires in Greece and Italy; the cyclones and tornadoes, especially in the Caribbean and surrounding countries, the earthquakes in China, and the volcanic eruptions in Chile;
- the high international prices of oil over six months of the year and the consequent difficulties experienced by airlines.

On the other hand, and especially from the second half of 2008, the growth scenario of unemployment, with direct consequences on the confidence of consumers and businesses, as well as on domestic demand, started a downward cycle in Europe, the US and Japan, reflecting a contraction of world tourism and taking, especially Europeans, to choose less distant destinations.

The year of 2008 was also characterized by a high volatility level of the exchange rates of major world currencies. According to data from the Eurostat and the IMF, the dollar and the euro registered significant gains against the currencies of many emerging markets. On the one hand, these valuations have made these markets more attractive in terms of tourist destinations, on the other, Europe and the U.S. lost competitiveness as destinations. The significant gains of the dollar and the euro eventually also reduced the propensity of the British, a major source market, to travel particularly to Europe.

The worsening of the economic and financial crisis in 2009 led to a comprehensive public intervention in the economy, trying to mitigate the fall in demand, as well as the risk and uncertainty of financial markets. The tourism sector in 2009 registered a contraction in activity, which according to the WTO, caused widespread reduction in tourism revenue. This is clear in Table 1, which shows that in 2009 all regions analyzed recorded negative annual rates.

To aggravate this situation, the continued increase in unemployment, conditioned by the success of state aid, limited access to credit and wage freezes, led to a reduction in the propensity of tourists from the main source markets, particularly Europeans, to travel. Therefore, the economic recovery of the main source markets, as well as the reduction of the high levels of unemployment are taken since that date, as the main constraints of the sector's recovery.

During 2009 significant fluctuations continued to be registered (*INE*, 2009). Many of the currencies of emerging countries (in terms of tourism), which in 2008 had depreciated against the dollar and the euro partly appreciated, although without reaching previous levels (IMF, 2010), but enough to allow Europe and the US to regain competitiveness as tourism destinations.

In 2010 there was a reversal of the downward trend of the world economy observed since 2008 (*INE*, 2010) and all major economic powers recorded a real GDP growth (IMF, 2011).

According to the UNWTO, the tourism sector in 2010, registered a significant recovery from the fall in 2009. However, the effects of the global economic crisis were still visible in this activity, to the extent that the recovery of tourist revenue was more modest than that observed in the number of tourists.

The amplitude of the variations in the recovery of tourism revenue in 2010, differs in the various economies. Very significantly in 2010 was the growth observed in this industry in China, which improved its rankings in all major industry indicators, assuming an important position in terms of tourism, both as receiver and as a provider (Li & Blake, 2010).

According to the WTTC, 2011 was marked by a deadlock since the world economy grew less in 2011 than in 2010, observing a slowdown in the rate of real GDP growth in all major economic powers, especially Japan, whose economy suffered heavily from the effects of the earthquake of March 2011. Among the various parts of the world, the EU27 recorded the lowest slowdown between 2010 and 2011. In emerging and developing economies, although wealth has grown less than in the previous year, progress was made at a rate that was more than triple than that of the EU and the US (INE, 2011).

Although the economic recovery has been heterogeneous all over the world, in 2011 tourism revenue maintained a positive performance, with the exception of North Africa and the Middle East which continued to recover from the breaks occurred in 2009, where Europe stands as the region of the globe that concentrated the largest proportion of tourism revenue worldwide.

With the economic downturn many challenges have emerged for tourism destinations and enterprises. After the significant contraction in 2009, the tourism sector recovered in 2010 and 2011 and international tourism exports increased (Table 1). The crisis has had a particularly strong impact and negative consequences in terms of employment and GDP in many countries. Despite the recent recovery, uncertainty about the length, depth and implications of the global economic crisis persists and this is transmitted to the tourism industry.

After the severe decline in real GDP in 2008, estimates for 2009 pointed to a stabilization of the world production at a lower level, but unemployment continued to rise in major tourism source markets, exchange rates and oil prices continued to fluctuate, and restrictions on bank credit remained. From the analysis of the average growth of tourism exports of the five most representative countries in each region of the world, it is observed that of the 59 countries considered in this study, 20 (33.9%) observed a negative average growth for the period 2007 -2011. According to the WTO, international tourism increased by about 4% in 2012 compared to 2011. In 2012, for the first time, a billion travellers crossed the borders, and in 2013 this organization predicts growth between 3% and 4% in international tourism (UNWTO, 2013).

3.2. The cycle synchronization

In the analysis of the synchronization of tourism exports cycles we have chosen the EU27 as the reference region, since this corresponds to the leading region in the world in terms of exports. The EU27 tourism exports generated in 2012, 412.0 billion dollars (about 5.6% of total exports); see WTTC (2012). The direct contribution of Travel & Tourism corresponded to 3.0% of total GDP and their total contribution represented about 8.4% of GDP. In addition, Travel and Tourism directly generated 3.6% of total employment, and their total contribution, including jobs indirectly supported by the industry accounted for 9.1% of total employment.

Table 3 presents cycle statistics for different regions of the world and compares them with the cycle of the EU27. We note that in terms of the CI, the concordance is stronger between the EU27 and Europe (91.30%), followed by North America (78.26%) and Southeast Asia (73.91%), and the lowest CI is observed for the Middle East (30.43%).

Concerning Pearson's correlation we found that the strongest correlation is with Europe (0.96), followed

Table 2

WEIGHT OF COUNTRY SPECIFIC TOURISM EXPORTS IN REGIONAL TOTAL

Sub-Sah. Africa	1990-1995	2000-2005	2007-2011	North (and Central) America	1990-1995	2000-2005	2007-2011	Middle East	1990-1995	2000-2005	2007-2011
South Africa	35.60%	47.80%	42.60%	United States	80.00%	77.00%	82.60%	U. Arab Emirates	31.80%	38.40%	42.20%
Mauritius	8.30%	7.10%	6.90%	Canada	10.10%	14.30%	9.50%	Saudi Arabia	15.20%	16.10%	13.40%
Kenya	16.00%	4.90%	5.50%	Mexico	9.90%	8.70%	7.90%	Lebanon	7.60%	11.20%	12.10%
Ethiopia	1.80%	2.70%	4.60%					Israel	19.20%	10.30%	8.20%
Tanzania	3.20%	3.90%	4.80%					Syria	6.50%	5.10%	5.80%
EU27				North East Asia				North Africa			
Spain	15.40%	16.50%	15.40%	China	30.50%	47.70%	39.10%	Egypt	35.60%	47.80%	42.60%
France	12.70%	15.30%	13.70%	Macau	11.10%	9.40%	16.40%	Morocco	8.30%	7.10%	6.90%
Germany	7.80%	9.70%	11.20%	Hong Kong	20.10%	11.60%	16.50%	Tunisia	16.00%	4.90%	5.50%
Italy	14.40%	11.90%	10.50%	Japan	15.60%	13.00%	10.60%	Algeria	1.80%	2.70%	4.60%
UK	11.10%	8.60%	8.90%	South Korea	16.00%	12.30%	10.50%	Libya	3.20%	3.90%	4.80%
Portugal	2.80%	2.50%	3.00%								
Europe				Oceania				Southeast Asia			
Turkey	2.10%	4.50%	4.80%	Australia	63.50%	68.10%	61.40%	Thailand	25.70%	31.90%	32.40%
Switzerland	5.20%	3.70%	4.10%	New Zealand	23.50%	19.80%	20.40%	Malaysia	13.60%	21.30%	25.90%
Russia	1.80%	3.30%	3.10%	Other Oceania	10.10%	9.80%	15.00%	Singapore	25.30%	12.70%	17.00%
Croatia	1.40%	1.90%	2.10%	Fiji	2.30%	1.70%	2.30%	Indonesia	24.20%	21.10%	11.30%
Norway	1.80%	1.20%	1.10%	Vanuatu	0.50%	0.40%	0.70%	Vietnam	1.80%	3.90%	5.10%
Latin America				Caribbean				South Asia			
Brazil	21.60%	26.50%	21.70%	Dom. Republic	10.50%	17.10%	18.60%	India	61.20%	69.60%	78.90%
Argentina	14.20%	13.60%	17.20%	Puerto Rico	18.90%	16.70%	16.00%	Pakistan	16.80%	10.40%	6.50%
Colombia	10.80%	10.10%	8.90%	Cuba	6.70%	9.30%	9.40%	Sri Lanka	11.10%	10.50%	5.50%
Peru	3.50%	5.90%	8.20%	Jamaica	13.40%	9.40%	9.60%	Maldives	4.00%	4.60%	3.50%
Panama	2.30%	3.60%	7.10%	Bahamas	9.90%	8.50%	8.70%	Nepal	6.60%	4.20%	2.40%

Sources: World Travel and Tourism Council and Authors' Calculations.

by Oceania (0.69), North America (0.59) and Southeast Asia (0.45). The lowest are observed for North Africa (-0.08), the Middle East (-0.12), Latin America (-0.23) and Northeast Asia (0.26).

We also observe that the regions with the highest correlation with the EU27 (Europe, Oceania and North America) have also tourism export cycles with strong coincident indices with this region, with the exception of Southeast Asia, which has a cycle that lags by about 3 years. Northeast Asia, the Middle East and sub-Saharan Africa have advanced cycles when compared to the EU27, of 3, 3 and 1 year, respectively.

Regarding the concordance index (CI) between the EU27 and the countries considered in this analysis, as well as the evolution of other indices, it is observed from Table A.1 of Appendix II, that the CI is strongest between cycles of the EU27 and Spain (82.61%), which is closely followed by Germany, the UK, the U.S., Singapore and Mauritius, all presenting CIs exceeding 70% with the cycle of the EU27. The country with the lowest CI with the EU27 is Lebanon (26.09%).

From the analysis of the evolution of synchronization an interesting phenomenon is observed, *i.e.*, 24 of the 59 countries have positive growth and 35 of the 59 countries negative growth (Table 4). Table 4 shows the annual variation of the CI for the period between 1993 and 2011. The values in this table are based on the recursive concordance index, that is, the average of the annual first difference of the recursive concordance Index (RCI). Countries with positive growth synchronization with the EU27 have generally a relatively low degree of synchronization (Table A.1).

Countries with positive growth of synchronization with the EU27 are generally developing countries where tourism has been of growing interest in recent decades (particularly sub-Saharan Africa and Latin America). These countries have, in some cases, historical and commercial links with EU27 countries, as well as, possibly, common source markets. Thus, the increased synchronization may possibly also be explained by the presence of such underlying cycles. On the other hand, countries with negative CI growth rates are generally located in regions where synchronization with the EU27 is relatively high (Table A.1). In this context, the growth margin in terms of synchronization is relatively low. These countries belong to North (and Central) America, North Africa, Middle East and Asia. The decrease in synchronization with the EU27 may be associated with a decreased in the dependence from European source markets, in favor of new origin markets.

The correlation coefficient and concordance index allow us to observe the effects of persistence and co-movement of tourism exports cycles (Table A.1). In several cases, we observed that the lags indicate that the EU27 tourism exports cycle anticipates 1-2 periods the tourism exports cycles from other regions or countries. The results also indicate that the number of lags identified is not indifferent to the indicator used (correlation coefficient or concordance index).

Indeed, the correlation coefficient compares the differences in the variations of the cyclical components, while the lagged concordance index is an indicator of the phases of the cycle. This indicator gives the percentage of time that the export cycles of two countries or regions are in the same phase. That is, the percentage of time in which both cycles are in expansion or recession. This indicator is sensitive to the persistence of the cycle, that is, changes in the phases of the cycle which do not occur in the short-run, but only over a more prolonged period of time.

The results for the CI between the EU27 and each of the remaining ten regions considered, suggest the existence of a delay of two periods in 30% of cases. In particular, for the Middle East, Northeast Asia and sub-Saharan Africa. At the disaggregated level (by country) the maximum CI also occurs at two periods in 47.5% of the countries considered. The results for the CI by country are between 91.3% (Europe except EU27) and 51.17% (Middle East).

These discrepancies may suggest that there are causal relations between the cyclical components of tourism exports in the various countries and regions considered.

Table 3

THE EU27 CYCLE STATISTICS AND THOSE OF SEVERAL REFERENCE REGIONS

Regiões	$\rho_{x,y}$	(+)/(−)	IC(%)	I_{IC1} (%)	I_{IC2} (%)	I_{IC3} (%)	SD	$\frac{SD_1}{SD_{EBT}}$	AR(1)	AR(2)	AR(3)
EU27	-	-	-	-	-	-	0.49	1	0.7	0.31	0
Caribbean	0.71	0	69.57*	45.45	52.38	50	0.68	1.39	0.76	0.48	0.26
Europe	0.96	0	91.30*	50	57.14	54.55	0.52	1.07	0.7	0.36	0.09
Latin America	-0.23	-3	56.52*	50	52.38	50	0.58	1.18	0.86	0.61	0.36
Middle East	-0.12	3	30.43	36.36	57.14*	54.55	0.42	0.87	0.41	-0.21	-0.32
North Africa	-0.08	-3	56.52*	50	47.62	45.45	0.65	1.33	0.82	0.53	0.28
North America	0.59	0	78.26*	54.55	42.86	40.91	0.64	1.3	0.79	0.57	0.37
Northeast Asia	0.26	3	60.87	31.82	61.9*	59	0.44	0.89	-0.41	0.09	-0.14
Oceania	0.69	0	52.17*	50	47.62	45.45	0.67	1.36	0.85	0.66	0.46
Southeast Asia	0.45	-3	73.91*	50	47.62	45.45	0.44	0.9	-0.21	-0.2	-0.13
Sub-Saharan Africa	0.39	1	47.83	59.09	61.9*	59.09	0.52	1.06	0.7	0.4	0.22

Sources: World Travel and Tourism Council and Authors' Calculations.

Note: * denotes the maximum concordance lag. South Asia was omitted due to lack of data.

Table 4

ANNUAL SYNCHRONIZATION GROWTH WITH THE EU27 TOURISM CYCLE (1993-2011)					
Country	Ranking	S.G.R.	Country	Ranking	S.G.R.
Germany	1	4.09%	Italy	31	-1.75%
Morocco	2	3.51%	Caribbean	32	-1.75%
Hong Kong	3	3.51%	Israel	33	-1.75%
Thailand	4	3.51%	Mexico	34	-1.75%
Bahamas	5	3.22%	Singapore	35	-1.75%
Kenya	6	3.22%	Cuba	36	-2.05%
Dominican Republic	7	2.92%	United Arab Emirates	37	-2.05%
Switzerland	8	2.92%	Maldives	38	-2.05%
Argentina	9	2.92%	China	39	-2.34%
Panama	10	2.92%	France	40	-2.34%
Portugal	11	2.63%	Jamaica	41	-2.34%
Turkey	12	2.63%	Puerto Rico	42	-2.34%
Brazil	13	2.34%	Russia	43	-2.34%
Japan	14	2.34%	Peru	44	-2.34%
South Korea	15	2.34%	Egypt	45	-2.34%
Solomon Islands	16	2.34%	Canada	46	-2.34%
Vanuatu	17	2.34%	Australia	47	-2.34%
South Africa	18	2.34%	Syria	48	-2.63%
Macau	19	2.05%	India	49	-2.63%
Pakistan	20	2.05%	New Zealand	50	-2.63%
Croatia	21	1.46%	Nepal	51	-2.63%
Saudi Arabia	22	1.46%	Indonesia	52	-2.63%
Lebanon	23	1.17%	Tanzania	53	-2.63%
Ethiopia	24	1.17%	Vietnam	54	-2.92%
Spain	25	-1.17%	Sri Lanka	55	-2.92%
Tunisia	26	-1.17%	Algeria	56	-2.92%
United States	27	-1.17%	Libya	57	-3.51%
Mauritius	28	-1.46%	Colombia	58	-3.51%
UK	29	-1.46%	Fiji	59	-3.51%
Malaysia	30	-1.46%			

Sources: World Travel and Tourism Council and Authors' Calculations.

Note: S.G.R. refers to Synchronization Growth Rate.

3.3. Granger causality between cyclical components

In order to investigate the interaction between cycles in greater detail a Granger causality analysis was also performed. The tests applied allow us to conclude whether a variable corresponding to a region or country's lagged tourism export cycle presents significant information to explain the EU27 tourism exports cycle and vice versa.

The results in Table 5 indicate that, in aggregate terms (regions), the tourism export cycle in the EU27 influences the cycles of three of the 10 regions considered (North (and Central) America, Oceania and Southeast Asia). However, evidence of causality in both directions in the relationship between the EU27 and North America (and Central) is also found.

At a disaggregated level, *i.e.*, between the EU27 and the 59 countries considered, there is evidence of causality in 24% of cases (Italy, Portugal, UK, Dominican Republic, Croatia, Libya, UAE, US, Japan, Macau,

India, Singapore, Thailand, and Kenya). There is also evidence of Granger causality of some countries in relation to the EU27 cycle, in particular the US, Portugal, Spain, Bahamas, Cuba, Russia, UAE, Morocco, Hong Kong, Macau, Australia, Maldives and Thailand.

Table 5

GRANGER CAUSALITY TESTS (STATISTICALLY SIGNIFICANT AT 10% LEVEL)

Null Hypothesis:	p-value
North America does not Granger Cause EU27	0.0252
EU27 does not Granger Cause North America	0.0319
Oceania does not Granger Cause EU27	0.0958
EU27 does not Granger Cause Southeast Asia	0.0935
EU27 does not Granger Cause Italy	0.0141
EU27 does not Granger Cause Portugal	0.0844
Portugal does not Granger Cause EU27	0.0977
Spain does not Granger Cause EU27	0.0808
EU27 does not Granger Cause UK	0.0067
Bahamas does not Granger Cause EU27	0.0921
Cuba does not Granger Cause EU27	0.0549
EU27 does not Granger Cause Dominican Republic	0.0153
EU27 does not Granger Cause Croatia	0.0978
Russia does not Granger Cause EU27	0.0528
United Arab Emirates does not Granger Cause EU27	0.0419
EU27 does not Granger Cause United Arab Emirates	0.0837
EU27 does not Granger Cause Libya	0.0107
Morocco does not Granger Cause EU27	0.0808
EU27 does not Granger Cause USA	0.0149
Hong Kong does not Granger Cause EU27	0.0895
EU27 does not Granger Cause Japan	0.0293
EU27 does not Granger Cause Macau	0.0935
Australia does not Granger Cause EU27	0.0288
EU27 does not Granger Cause India	0.0740
Malaysia does not Granger Cause EU27	0.0736
EU27 does not Granger Cause Singapore	0.0077
Thailand does not Granger Cause EU27	0.0867
EU27 does not Granger Cause Thailand	0.0412
EU27 does not Granger Cause Kenya	0.0261

Source: Authors' Calculations.

4. Conclusion

In times of crisis tourism becomes of prominent interest in public and political debates; however it decreases drastically during years of economic growth (Jóhannesson, 2010). These discussions seem to suggest the need for a better understanding of how the various countries (or regions) interact with each other and how they affect the tourism industry (Cohen and Neal, 2010).

The results of this study show that the tourism exports cycle in the EU27 anticipates by 1-2 periods the tourism export cycle from other regions or countries. This evidence of delay between the cycles of the EU27 and the other regions and countries considered, can be used as a decision support tool for economic agents associated with this activity.

The results for the recursive concordance index also suggest a change in the behavior of the synchronization between cycles. This dynamics is characterized by positive growth of synchronization in developing countries where tourism has been growing in recent decades (particularly in sub-Saharan Africa and Latin America), with the EU27. Conversely, it appears that in regions where synchronization with the EU27 is relatively high (Table A.1) and the tradition in tourism greater, these countries/regions tend to have lower synchronization growth. In terms of synchronization, countries with negative growth rates in terms of the CI, are located, in general, in North (and Central) America, North Africa, Middle East and Asia. The decrease in synchronization with the EU27 may be associated with a decrease in dependence from European origin markets in favour of new markets.

Finally, the description and analysis of economic crises and other socio-economic disturbances that took place in the period under study highlight the fragility of the tourism industry. These phenomena are documented in tables and graphs of tourism exports with negative growth in various regions and countries for most crisis periods identified and analyzed in Section 3.1.

The analysis in greater detail of the synchronization, causality and the relationship between business cycles and the cycles of global tourism demand are currently an on-going line of research by the authors.

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Appendix I – Methodology Used for the Decomposition of the Time Series

Consider the following structural additive model,

$$y_t = \Gamma_t + C_t + \varepsilon_t \quad (\text{A.1})$$

where the dependent variable, $\{y_t\}$, represents the observed values of the time series of interest, Γ_t represents the trend function, C_t the cyclical component, and ε_t the noise component. Thus, model (A.1) corresponds to the decomposition of the $\{y_t\}$ time series. The non-stationary component (trend), Γ_t and the stationary cycle, C_t , are considered as unobserved variables.

According to Clark (1987), Wada and Perron (2006) and Guerreiro, Rodrigues and Andr az (2012) the most frequently used model in studies involving the deviation cycle, using the Kalman filter is,

$$\begin{cases} y_t = T_t + C_t + \varepsilon_t \\ T_t = T_{t-1} + \beta_{t-1} + \delta_t \\ \beta_t = \beta_{t-1} + \theta_t \\ C_t = \theta_1 C_{t-1} + \theta_2 C_{t-2} + \omega_t \end{cases} \quad (\text{A.2})$$

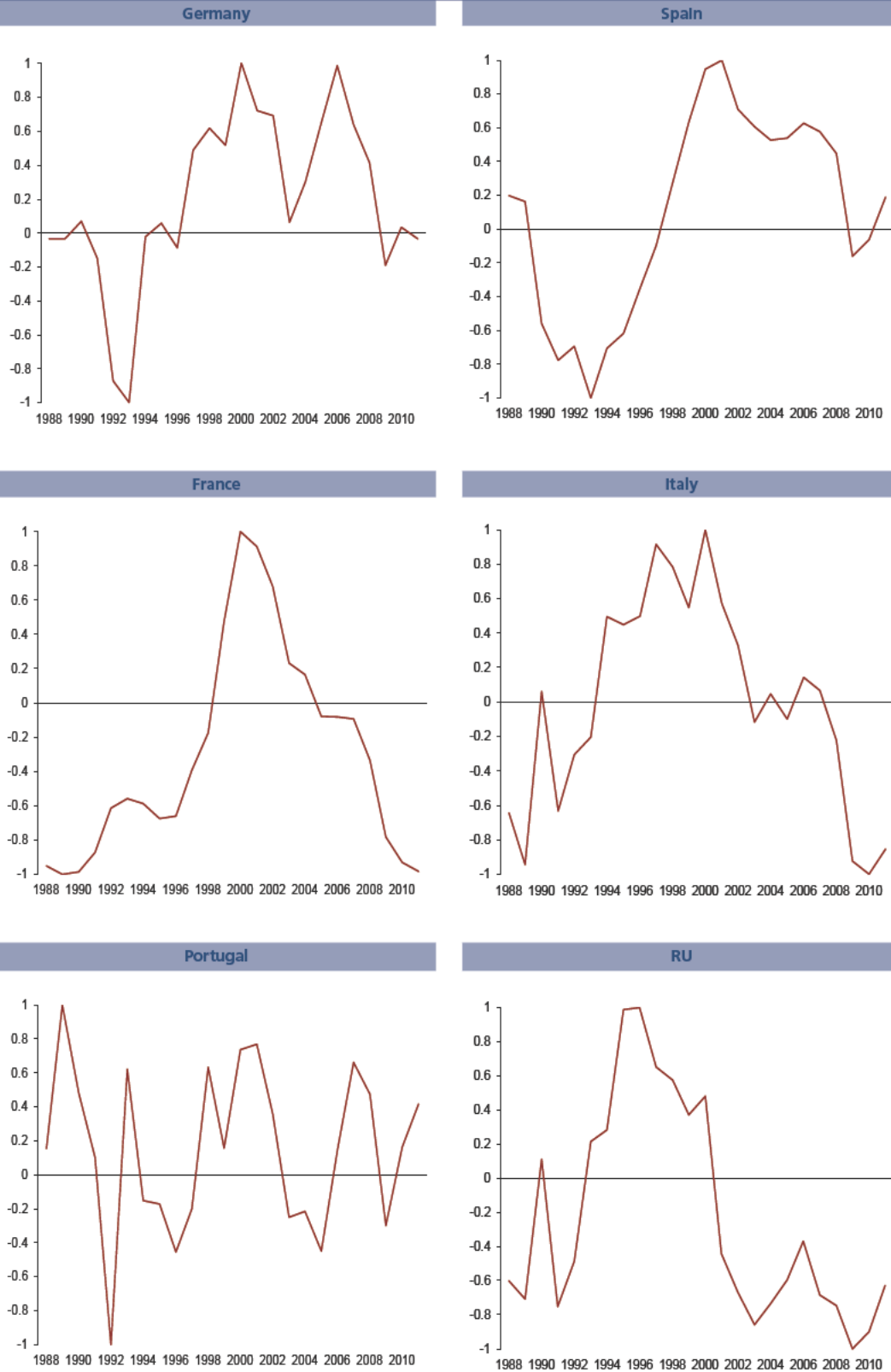
The trend, β_t , represented in (A.2) uses the known formulation of Wega and Theil (Crato 1990), in which the variable follows an expected linear growth, both the trend β_t and the level (T_t) evolve according to a random walk (Gilchrist, 1976), and the cyclical component, C_t , follows a second-order autoregressive process (Wada and Perron, 2006 and Guerreiro, Rodrigues and Andr az, 2012).

Based on the state space formulation in (A.2) subsequent application of the Kalman filter can be considered to obtain the signals (values) of the unobserved variables, Γ_t and C_t , from the signal provided by the observed time series $\{y_t\}$ (see e.g., Harvey, 1989 and Ogata, 2002). The initialization technique of the Kalman filter used in this study was diffuse initialisation (Durbin and Koopman, 2001 and Guerreiro, 2010). Therefore, the main variable for the study of the cycle, after extracted by the method suggested by Kalman (1960) and Kalman and Bucy (1961) will be the stationary variable (the deviation cycle) C_t .

Appendix II - EU27 Tourism Exports Cycle

Chart A.1

EU27 TOURISM EXPORTS CYCLES



Source: Authors' Calculations.

Table A.2 (to be continued)

EUZ7 AND COUNTRY CYCLE SYNCHRONIZATION AND OTHER STATISTICS												
Region	Country	$\rho_{e,u}$	(+)/(-)	IC(%)	$L_{TC}(\%)$	$L_{TC}(\%)$	$L_{TC}(\%)$	SD	$\frac{SD_{U,EUZ7}}{SD_{U,EUZ7}}$	AR(1)	AR(2)	AR(3)
EUZ7 Countries	France	0.77	0	56.52	59.09	57.14	54.55	0.62	1.27	0.86	0.62	0.36
	Germany	0.77	0	73.91*	45.45	42.86	40.91	0.5	1.02	0.69	0.38	0.21
	Italy	0.82	0	69.57*	45.45	52.38	50	0.6	1.22	0.71	0.51	0.31
	Portugal	0.35	-3	56.52	63.64*	47.62	45.45	0.48	0.98	0.15	-0.11	-0.29
	Spain	0.63	1	82.61*	68.18	61.9	59.09	0.59	1.2	0.88	0.7	0.5
UK	0.46	-2	78.26*	45.35	33.33	31.82	0.64	1.31	0.77	0.59	0.4	
Other European Countries	Croatia	0.16	3	39.13	54.55*	47.62	45.45	0.47	0.96	0.78	0.56	0.39
	Russia	0.5	-3	56.52	59.09	71.43*	68.18	0.55	1.14	0.76	0.5	0.19
	Switzerland	0.12	-2	52.17	68.18*	61.9	59.09	0.52	1.07	0.47	0.07	0.03
	Turkey	0.08	-1	43.48	50	61.90*	59.09	0.49	1	-0.28	-0.23	0.02
	Norway	0.57	-1	60.87*	54.55	47.62	45.45	0.62	1.28	0.79	0.48	0.18
North (Central) America	Canada	0.8	0	65.22*	50	42.86	40.91	0.57	1.16	0.54	0.31	0.1
	Mexico	0.13	-1	60.87*	45.45	52.38	50	0.54	1.1	0.72	0.34	0.1
	US	0.5	3	78.26*	54.55	42.86	40.91	0.61	1.24	0.72	0.5	0.3
	Australia	0.72	0	60.87*	45.45	42.86	40.91	0.72	1.47	0.85	0.65	0.44
Oceania	Fiji	-0.15	3	43.48	40.91	47.62*	45.45	0.59	1.2	0.9	0.7	0.47
	New Zea.	0.63	0	52.17	54.55	57.14*	54.55	0.68	1.39	0.76	0.43	0.16
	Sol. Islands	-0.37	3	39.13	54.55	57.14*	54.55	0.61	1.24	0.78	0.58	0.34
	Vanuatu	-0.11	3	43.48	40.91	47.62*	45.45	0.62	1.27	0.92	0.77	0.6
	Argentina	-0.48	-2	56.52*	45.45	47.62	45.45	0.59	1.2	0.83	0.59	0.37
Latin America	Brazil	-0.22	-3	43.48	40.91	57.14*	54.55	0.52	1.06	0.83	0.49	0.1
	Colombia	0.1	1	39.13	59.09*	52.38	50	0.45	0.92	0.21	-0.46	-0.21
	Panama	-0.3	-2	47.83	63.64*	38.1	36.36	0.56	1.14	0.8	0.55	0.34
	Peru	0.43	-1	56.52*	50	38.1	36.3	0.43	0.88	0.61	0.21	-0.02
	Bahamas	0.24	-3	65.22*	54.55	38.1	36.36	0.52	1.06	0.54	0.01	-0.08
Caribbean	Cuba	0.49	-1	60.87*	54.55	33.33	31.82	0.69	1.42	0.68	0.24	0
	Dom. Rep.	0.3	3	52.17	40.91	61.90*	59.09	0.46	0.95	0.52	0.03	0.01
	Jamaica	-0.13	3	52.17	36.36	61.9*	59.09	0.53	1.08	0.56	0.14	-0.09
	Puerto Rico	0.66	0	60.87	63.64*	33.33%	32.82	0.55	1.13	0.64	0.16	-0.06

Sources: World Travel and Tourism Council and Authors' Calculations.

Note: * denotes the maximum concordance lag.

Table A.2 (continued)

Region	Country	ρ_{xy}	(+)/(−)	IC(%)	$L_{TC1}(\%)$	$L_{TC2}(\%)$	$L_{TC3}(\%)$	SD	$\frac{SD_t}{SD_{OBS}}$	AR(1)	AR(2)	AR(3)
North Asia	China	0.64	0	56.52*	36.36	52.38	50	0.62	1.27	0.78	0.45	0.12
	Hong Kong	-0.57	0	60.87	68.18*	52.38	50	0.55	1.12	0.72	0.45	0.29
	Japan	-0.19	3	47.83*	36.36	42.86	40.19	0.56	1.14	0.84	0.66	0.44
	Macau	-0.76	0	39.13	52.38*	52.38*	50	0.6	1.22	0.87	0.67	0.48
	South Korea	0.21	1	39.13	54.55*	38.1	36.36	0.48	0.98	0.59	0.24	0.01
South Asia	India	-0.24	2	56.52	50	33.33	31.82	0.43	0.88	0.6	0.15	-0.01
	Maldives	0.13	1	65.22	22.73	54.14	54.55	0.41	0.84	-0.24	-0.24	-0.08
	Nepal	0.07	-3	43.48	45.45	42.86	40.91	0.6	1.22	0.6	0.24	0.17
	Pakistan	-0.62	-1	34.78	40.91	47.62	45.45	0.53	1.08	0.86	0.58	0.3
	Sri Lanka	-0.08	1	56.52	31.82	38.1	36.36	0.53	1.08	0.51	0.17	-0.15
Southeastern Asia	Indonesia	0.31	-3	56.52	59.09*	52.38	50	0.53	1.08	0.86	0.62	0.42
	Malaysia	0.5	1	69.57*	54.55	61.9	59.09	0.62	1.27	0.39	-0.05	-0.22
	Singapore	-0.04	2	73.91*	50	28.57	27.27	0.5	1.02	0.66	0.36	0.19
	Thailand	0.49	-3	65.22*	45.45	52.3	50	0.58	1.18	-0.23	-0.12	-0.16
	Vietnam	0.67	0	47.83*	40.91	38.1	36.36	0.6	1.22	0.78	0.47	0.18
North Africa	Algeria	0.33	3	47.83	50	52.38*	50	0.6	1.22	0.8	0.57	0.36
	Egypt	-0.2	-1	60.87*	27.27	42.86	40.91	0.51	1.04	0.32	-0.13	-0.18
	Libya	0.1	3	34.78	45.45	60.67	63.64*	0.62	1.27	0.88	0.72	0.54
	Morocco	-0.09	-3	65.22*	54.55	57.14	54.55	0.55	1.12	0.83	0.66	0.5
	Tunisia	0.39	-3	69.57	72.73	76.19*	72.73	0.5	1.02	0.79	0.61	0.42
Sub-Saharan Africa	Ethiopia	-0.25	1	26.09	31.82	42.86*	40.91	0.49	1	0.31	-0.13	-0.15
	Kenya	-0.13	2	65.22*	54.55	42.86	40.91	0.6	1.22	0.69	0.43	0.26
	Mauritius	0.66	0	78.26*	45.45	52.38	50	0.5	1.02	0.57	0.23	0.01
	South Africa	0.25	2	43.48	50	61.90*	59.09	0.48	0.98	0.65	0.43	0.16
	Tanzania	0.34	0	52.17*	45.45	42.86	49.91	0.46	0.94	0.66	0.32	0.1
Middle East	Israel	0.46	-1	65.22*	50	42.86	40.91	0.51	1.04	0.62	0.19	-0.06
	Lebanon	-0.61	0	26.09	40.91	47.62*	45.45	0.51	1.04	0.67	0.27	-0.08
	Saudi Arabia	-0.23	3	30.43	54.55	47.62*	45.45	0.66	1.35	0.73	0.5	0.31
	Syria	0.25	-2	52.17	56.36	38.1	36.36	0.53	1.08	0.69	0.41	0.19
	UA Emirates	-0.02	-3	52.17	54.55	61.90*	59.09	0.56	1.14	0.82	0.53	0.27

Sources: World Travel and Tourism Council and Authors' Calculations.

Note: * denotes the maximum concordance lag.