The tourism and economic growth enigma: Examining an ambiguous relationship through multiple prisms

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Abstract

This paper revisits the ambiguous relationship between tourism and economic growth, providing a comprehensive study of destinations across the globe which takes into account the key dynamics that influence tourism and economic performance. We focus on 113 countries over the period 1995-2014, clustered, for the first time, around six criteria that reflect their economic, political and tourism dimensions. A Panel Vector Autoregressive model is employed which, in contrast to previous studies, allows the data to reveal any tourism-economy interdependencies across these clusters, without imposing *a priori* the direction of causality. Overall, the economic-driven tourism growth hypothesis seems to prevail in countries which are developing, non-democratic, highly bureaucratic and have low tourism specialization. Conversely, bidirectional relationships are established for economies which are stronger, democratic and with higher levels of government effectiveness. Thus, depending on the economic, political and tourism status of a destination, different policy implications apply.

Keywords: tourism-economic growth, panel vector autoregressive model, panel impulse responses, clusters.

JEL codes: C32, F43, L83, O40, O57

1. Introduction

Since the seminal papers of Copeland (1991), Hazari and Sgro (1995), and Lanza and Pigliaru (2000), the relationship between tourism and economic growth received considerable attention and generated a great amount of research in international tourism studies. The theoretical premise of this inquiry was on one end of the spectrum, the idea that the injection of tourism income to the wider economy would spillover positive effects through direct, indirect and induced channels (e.g. employment, business activities, balance of payments). On the other end of the spectrum, the assumption was that the economic climate along with economic policies applied to the destination could directly or indirectly encourage the development of the tourism sector and thus increase tourism income (see, for example, Chatziantoniou et al., 2013).

Relevant empirical work on this topic sought to address the question of whether there is a causal direction of effects between the tourism sector and national economies. This question was mainly approached through time-series analyses of individual countries, or on some occasions, through cross-section and panel data models (see, *inter alia,* Chen and Chiou-Wei, 2009; Apergis and Payne, 2012; Chang et al., 2012; Antonakakis et al., 2015). In the latter case, authors selected groups of countries based mainly on geographical or income criteria. The bulk of these studies postulate the existence of spillover effects between the two factors, which run either from tourism to the economy (tourism-led economic growth hypothesis) or from the economy to tourism (economic-driven tourism growth hypothesis) (see, Parrilla et al., 2007; Payne and Mervar, 2010; Schubert et al., 2011, among others). At the same time, there are researchers who support the existence of bidirectional causalities or no causalities at all (see, for example, Katircioglu, 2009; Ridderstaat et al., 2016; Antonakakis et al., 2015).

Given that the existing work provides diverse and contradictory accounts of tourism-economy feedback effects, a more in-depth and comparative examination of the said relationship is necessary. Admittedly, the dynamics between tourism and the economy rely on various aspects that lie beyond the regional and income effects that have been examined so far (a more detailed presentation of these findings can be found in Section 2). For instance, Chang et al. (2012) propose that the effect of tourism on economic growth depends largely on the extent of its tourism specialization. Even more, the political economy literature has repeatedly stressed the importance of the level of democracy on economic development (Acemoglu et al., 2001, 2002; Glaeser et al., 2007; Acemoglu et al., 2008). Despite ample evidence, the tourism-growth literature remains highly disconnected from these factors. Yet, the extent of specific economic and tourism features (e.g. standard of living, tourism competitiveness) along with their wider geo-political qualities (e.g. political regime) could shape the interaction between tourism and the broader economy. For this reason, the aim of this paper is to shed more light on this ambiguous relationship by examining the dynamic links between tourism and economic growth through multiple prims in a sample of 113 countries over the period 1995-2014, which renders it the most comprehensive study of the tourism-growth relationship.

More specifically, our study adds to the existing literature by exploring, for the first time, whether country-specific characteristics alter the said relationship. By considering multiple classifications, we obtain new insights, which would otherwise remain unreported. In particular, we cluster our sample countries on the basis of six key criteria: their (a) standard of living, (b) level of development, (c) government effectiveness, (d) political regime, (e) level of tourism specialization and (f) tourism competitiveness. These criteria reflect three dimensions (economic, political and tourism) that are crucial for revealing the actual dynamics between tourism and the economy.

For the purpose of this study we apply a Panel Vector Autoregressive model (PVAR) approach along with panel impulse response functions (PIRFs). To our knowledge, this is the first study that employs a PVAR approach to examine the tourism-growth nexus in such a comprehensive panel of countries, which constitutes our second innovation. The advantages of using a PVAR methodology relative to previously-used methods (cross-section and panel regression models) to examine the relation between tourism and economic growth are several.

Firstly, VARs are extremely useful when there is little or ambivalent theoretical information regarding the variables' relationships to guide the specification of the model. Given that there is no consensus in the literature as to which tourism-growth hypothesis holds, it is preferable to allow the data reveal the nature of the tourism-growth relationship instead of *a priori* selecting a causality direction, as in the case of a panel regression model. Secondly and more importantly, VARs are explicitly designed to address the endogeneity problem, which is one of the most serious challenges of the empirical research on tourism and economic growth (see, for instance, Lee and Chang, 2008; Holzner, 2011; Chang et al., 2012). VARs help to alleviate the endogeneity problem by treating all variables as potentially endogenous and explicitly modelling the feedback effects across them.

Thirdly, impulse response functions based on VARs can account for any delayed effects on and of the variables under consideration and thus, determine whether the effects between tourism and growth are short-run, long-run or both. Such dynamic effects cannot be captured by panel regressions. Fourthly, PVARs allow us to include country fixed effects that capture time-invariant components that may affect tourism and growth, such as country size. Fifthly, time fixed effects can also be added to consider any global (macroeconomic) shocks, such as the global financial crisis, that may affect all countries in the same way. Last but not least, PVARs can be effectively employed with relative short-time series due to the efficiency gained from the cross-sectional dimension.

The results of this study do not lend support to the existence of a tourism-led economic growth relationship in none of the clusters. Rather, the findings mainly confirm the economic-driven tourism growth hypothesis. The latter holds for countries with low standards of living, developing economies, low government effectiveness, non-democratic regimes, low tourism specialization and low tourism competitiveness. By contrast, democratic countries characterized by high standards of living, government effectiveness show bidirectional causalities. Such findings challenge the idea of tourism as a poverty alleviation driver and highlight the influential role of political institutions and tourism offer qualities in identifying the relationship between tourism and economic growth.

The rest of this paper is structured as follows. Section 2 provides a review of the relevant literature. Section 3 describes the data and classifications used for this study, whereas Section 4 presents the econometric approach. Furthermore, Section 5 reports the empirical results of our analysis while Section 6 concludes the paper by outlining implications for policy.

2. Literature review

In recent years, tourism studies have shown a growing interest in the relationship between tourism and the wider economy. Relevant work sought to explore the causal direction of effects between a country's international tourism presence and its overall economic performance. In particular, it attempted to define whether tourism activity drives the growth of host economies or whether national economies prompt tourism expansion. The outcome of this extended line of inquiry is a mosaic of different, often opposing interpretations that render this area of research inconclusive and still open to discussion.

More specifically, there is a considerable number of studies which provide evidence of the existence of a unidirectional relationship, either from tourism to the economy - also known as the tourism-led economic growth (TLEG) hypothesis - or from the economy to tourism - the so-called economic-driven tourism growth (EDTG) hypothesis. Indicatively, the empirical work of Parilla et al. (2007) in Spain, Schubert et al. (2011) in Antigua and Barbuda and Eeckels et al. (2012) in Greece advocate for the TLEG hypothesis, suggesting that the tourism specialization of these countries enhances their overall growth rates. On the other hand, Payne and Mervar (2010) in Croatia, Tang (2011) in Malaysia and Chatziantoniou et al. (2013) in

France hold that it is the economic growth of state economies that stimulates tourism development.

Apart from the unidirectional hypotheses, several scholars found that the causal relationship between tourism and the economy runs in both directions. For instance, Chen and Chiou-Wei (2009) in South Korea and Ridderstaat et al. (2016) in Aruba support the bidirectional hypothesis, according to which there are mutual influences across the tourism-economy nexus. At the same time, there are occasions in which all the aforementioned propositions are rejected, as in the cases of Katircioglu (2009) in Turkey and Tang and Jang (2009) in the US, where no causal links between the two factors can be established. Furthermore, Antonakakis et al. (2015) find that the tourism-economic growth relationship is not stable over time but rather responsive to major economic events.

It becomes apparent that the existing literary work does not provide a single interpretation, which can describe the tourism-economy relationship comprehensively. It is also worth commenting that in their majority, relevant studies narrow their focus on specific case-study areas. However, researchers such as Lee and Chang (2008) and Dritsakis (2012) argue that a cross-sectional analysis of the tourism-economy dynamics allows for a more in-depth and comparative examination of different country groups. In addition, it is plausible to propose that the use of panel data can decrease endogeneity through the consideration of specific country effects, omitted variables, reverse causality and measurement error.

Indeed, there is an emerging strand of the literature which follows the panel data approach. Most commonly, studies across this path cluster their countries according to their geographical proximity. For example, Narayan et al. (2010) explore four Pacific islands, whereas Dritsakis (2012) examines a selection of Mediterranean destinations. Using panel cointegration tests, both studies postulate the TLEG hypothesis. In addition, Apergis and Payne (2012) choose to investigate nine Caribbean states where the panel error correction model reveals bi-causal links. Similarly, Lee and Brahmasrene (2013) employ both techniques for 27 European Union member countries confirming positive effects of tourism on economic growth.

There are also few studies that use panel data from countries across the globe. Indicatively, Holzner (2011) examines 134 countries, observing that tourism impacts on national economies positively, although not at a particularly high degree. Furthermore, Ivanov and Webster (2013) consider the effect of globalization on tourism's contribution to economic growth in 167 countries, concluding that globalization plays no significant role.

The focus on a large number of countries has certain advantages, nevertheless sensitivity analysis, through the classification of countries into different groups could provide a more in-depth insight into the tourism-growth relationship. In this respect, there are some papers that classify their sample countries based on specific criteria. A characteristic example is the work of Lee and Chang (2008) who apart from a geographical classification (Asian, Latin American and Sub-Saharan African destinations), they also divide their 55 sample countries into OECD and non-OECD members. The researchers report that the nature of the tourism-economic growth relationship exhibits differences depending on their region or OECD membership. For example, there is a long-run TLEG causality for OECD countries, while for non-OECD countries this causality is bidirectional. The latter is also reported for Latin America and sub-Sahara Africa but no long-run relationship is confirmed for Asia.

Another case in point is that of Sequeira and Nunes (2008), who divide their case-study areas in small (based on demographics) and poor countries (based on per capital GDP) to investigate whether the effect of tourism on the economy is significantly higher for these clusters as compared to international average. They demonstrate that tourism specialization is more influential for poor countries; a case that does not hold for small ones. Similar studies that group countries based on the type of their economy are these of Seetanah (2011), who concentrates on a sample of island economies and reports bidirectional causality between tourism and economic growth, and Chou (2013), who narrows down his sample selection to transition economies using panel Granger causality tests, yet no clear pattern is revealed.

Apart from the aforementioned, researchers may also employ alternative classifications to filter their inquiry of the tourism-economy relationship. For instance, Arezki et al. (2009) assess 127 countries based on their tourism specialization as indicated by their number of UNESCO World Heritage Sites (WHS), reporting that specialization increases the positive effects of tourism on economic growth. More interestingly, Chang et al. (2012) group 159 countries into two clusters (high and low regimes) for each of three classifications; their trade openness, their investment share to GDP and their share of government consumption to GDP. They provide evidence that countries which belong to low regimes tend to exhibit a stronger TLEG relationship whereas economies at high regimes do not always enjoy significant tourism effects.

As encapsulated in the previous paragraphs, scholars have recently shown a strong interest in examining multiple countries rather than isolated cases. Nonetheless, the majority of these studies use either none or a single classification for sample countries, such as a geographic-based characteristic or an economic criterion. There are only but few attempts to introduce various classifications within the same study (as in the case of Chang et al., 2012). Moreover, all papers that use panel data and/or country classifications select *a priori* a causal relationship, which could flow from either tourism or the economy. This paper aims to extend this strand of the literature by using a PVAR approach and analyzing a set of six characteristics, which capture the three dimensions that influence tourism-growth effects (i.e. economic, political/governance and tourism product). The PVAR approach allows the data to reveal the actual causal direction themselves, instead of *a priori* defining the nature of this relationship.

3. Data

In this study we collect annual data from the World Development Indicators database maintained by the World Bank for per capita international tourism receipts (ITRCPTPC), per capita tourism expenditures (ITEXPPC) and per capita tourist arrivals (ITARRPC), over the period 1995-2014 for 113 developed and developing countries (totaling 2260 observations). The use of three different proxies for tourism income was chosen for robustness purposes. However, for the sake of brevity, we present the findings that are based only on per capita international tourism receipts. The results from using per capita tourism expenditures and per capita tourist arrivals are qualitatively similar and available from the authors upon request.

Furthermore, we obtain annual data for real GDP per capita (in 2005 US$, GDPPC), level of development, government effectiveness (GOVEFF), polity IV index (POLREG), number of UNESCO WHS (TOURSPEC) and travel and tourism competitiveness index (TTCI), as criteria for our classifications of countries. Real GDP per capita and government effectiveness scores were obtained from the World Development Indicators database maintained by the World Bank. The classification of countries between developed and developing follows the United Nations' classification. Data for the polity IV index are accessed through the Polity IV project website (www.systemicpeace.org/polity/polity4.htm). Finally, information on the number of UNESCO WHS is retrieved from UNESCO's website (whc.unesco.org/en/list), whereas data regarding the travel and tourism competitiveness index are acquired from the World Economic Forum[1].

Based on the aforementioned data, we proceed with the classification of the 113 countries using the following criteria:

a. *Standards of living*. An economic attribute of destinations such as their standard of living (STANLIV) is among the factors that need to be taken into consideration. Firstly, a high standard of living would normally imply high relative prices within the destination and the

[1]http://www3.weforum.org/docs/TT15/WEF_Global_Travel&Tourism_Report_2015.pdf.

reverse (Rodriguez et al., 1998). Thus, tourism prices, shaped largely by the standard of living in one destination and compared to tourism prices/standard of living in alternative destinations can influence affordability and destination choice (Song and Wong, 2003). On this premise, it is interesting to investigate whether they also influence tourism success in stimulating the economy. Secondly, destinations' standard of living can be improved by the tourism industry over time (Saveriades, 2000; Tosun, 2002). This means that we need to examine whether changes in the standard of living affect tourism-economy interdependencies. Given that GDP is one of the measures that reflect standards of living, we classify countries into three distinct groups based on their GDP per capita. Figure 1 demonstrates countries classification from the lowest standards of living to the highest, moving from cluster 1 to 3.

[Insert Figure 1 around here]

b. *Level of development*. We draw a distinction between developed and developing countries to assess whether there are any differences in the way that their tourism performance affects their economies. This is a particularly current issue given that tourism is often presented as a driver for poverty alleviation (see, for instance, UNWTO and SNV, 2010). For this to hold, we would expect a TLEG relationship in developing economies. In fact, the study of the tourism-economy relationship in the context of developing countries has attracted some attention and was not always backed up by empirical evidence (see, *inter alia* Ekanayake and Long, 2012). Thus, it is considered valuable to also use this clustering and try to shed some more light on this critical question. Our grouping of developed and developing countries follows the United Nations classification[2].

[2] http://www.un.org/en/development/desa/policy/wesp/wesp_current/2014wesp_country_classification.pdf.

c. *Government effectiveness*. We consider some additional parameters, such as countries' level of bureaucracy, given that this can also influence the success of their tourism product. One salient example is the ease of issuing a visa, which affects visitation decisions (Cheng, 2012). Furthermore, government-led administrative tasks which support tourism operations, such as infrastructure provisions, can influence the impact that the sector has on the national economy. Similarly, taxes levied on tourists and tourism-related businesses need to be redistributed efficiently in order to make a positive impact (Gooroochurn and Sinclair, 2005). Overall, governments play a central role in tourism as they provide the regulations for tourism planning and management and thus, it is plausible to take their effectiveness into account. Figure 2 illustrates the classification of our sample countries according to this criterion. The level of effectiveness increases as we move from cluster 1 to 3.

[Insert Figure 2 around here]

d. *Political regime*. We distinguish countries based on their level of democracy. According to the literature, we argue that more democratic countries exhibit higher political stability (Dutt and Mobarak, 2015), which in turn encourages economic development and tourism activity (Farmaki et al., 2015). Interestingly, there is evidence that extended political unrest, as compared to one-off short-term political incidents, has remarkably more devastating results for tourism (Fletcher and Morakabati, 2008). Thus, it makes sense to assume that long-term political turbulence can severely hit tourism and the economy as a whole. Figure 3 presents this grouping of countries, based on the polity IV index, where cluster 1 denotes authoritarian or hybrid regimes (i.e. a mix of anocratic and autocratic regimes - denoting the non-democratic regimes), cluster 2 refers to "flawed" democracies and cluster 3 to full democracies.

[Insert Figure 3 around here]

e. *Level of tourism specialization*. We group countries based on their number of UNESCO WHS, with more WHS to reflect more specialized destinations, similarly to Arezki et al. (2009). The WHS list may include monuments, groups of buildings, forests, lakes, mountains and other areas of special cultural and/or natural significance (UNESCO, 1972). The WHS list has international geographic coverage and is recognized by 191 countries. As argued by Arezki et al. (2009) and Yang et al. (2010), the existence of a high number of sites ascribed with the UNESCO status is likely to affect growth through tourism activity. Indeed, the WHS list has been evolved into a strong marketing tool for tourism, although some researchers have recently raised their doubts with regards to WHS' fostering effect on tourism and economic growth (see, for instance, Cellini, 2011; Huang et al., 2012). Figure 4 demonstrates this classification, with cluster 1 being the countries with the lowest and cluster 3 the countries with the highest levels of tourism specialization.

[Insert Figure 4 around here]

f. *Tourism competitiveness*. We adopt the travel and tourism competitiveness index that combines several of the aforementioned characteristics. More specifically, TTCI is constructed on the basis of policy rules and regulations, which relate to our government effectiveness and political regime criteria, price competitiveness, as well as, cultural resources, which is represented by the tourism specialization factor (number of WHS) which we employ here. Thus, the tourism competitiveness clustering allows us to compare and corroborate our TTCI results with the results of individual criteria. Table 1 provides the list of countries based on this categorization, where cluster 1 are the countries with the lowest and cluster 3 the countries with the highest levels of tourism competitiveness.

[Insert Table 1 around here]

Descriptive statistics of each variable and across country groups are presented in Table 2.

[Insert Table 2 around here]

From Table 2 we observe the significantly higher income that the developed countries exhibit compared to the developing ones. Furthermore, we see that developing countries have, on average, lower values in their tourism proxies, although their growth rates are higher (on average) compared to those of developed economies. The skewness and kurtosis values provide evidence that the distribution of the series is not normal, as it exhibits flat tails (leptokurtic distribution) with positive skewness. This is suggestive of the fact that our series favor extreme values, especially towards the right tail of the distribution. This is rather expected given the heterogeneous economic and tourism growth patterns among the 113 countries of our sample. The Jarque-Bera statistic confirms the non-normality of the series. For brevity, we do not report all the descriptive statistics for all clusters, nevertheless, these suggest that there are differences in the economic and tourism growth rates across clusters (the results are available upon request).

3.1 Clustering approach

The classification of countries in the aforementioned 3 clusters for the standards of living, government effectiveness, political regime, level of tourism specialization and tourism competitiveness is based on the *k*-means clustering method (the level of development criterion has only 2 clusters and these are given by the United Nations). The *k*-means clustering approach aims to partition *n* observations (in our case countries) into *k* clusters in which each observation belongs to the cluster with the nearest mean, serving as a prototype of the cluster. The clustering was performed in *R* using the Hartigan and Wong (1979) algorithm.

More specifically, given a set of observations (x_1, x_2, …, x-n), where each observation is a d-dimensional real vector, k-means clustering aims to partition the n observations into $k(n)$ sets S = {S_1, S_2, …, S_k} so as to minimize the within-cluster sum of squares (WCSS). In other words, its objective is to find:

$$\arg\min_S \sum_{i=1}^{k} \sum_{xS_i} \left\| \|x - \mu_i\| \right\|^2 \quad (1)$$

where μ_i is the mean of points in S_i.

Our results presented here are based on $k(n)$=3 set, since this number resulted in an ample amount of countries (and therefore observations to perform our analysis) in each set/cluster. The details of the relevant clusters, in terms of minimum and maximum values are shown in Table 3.

[Insert Table 3 around here]

We need to emphasize that these results remain robust to alternative values of sets/clusters, such as 2 or 4. The latter are available upon request.

3.2 Panel unit root tests

The first step in the investigation of causality is to determine whether the series has any integration orders. For this purpose, this study employs panel unit root tests developed by Levin et al. (2002) (hereafter LLC) and Im et al. (2003) (hereafter IPS).

The LLC (2002) unit root test considers the following panel ADF specification:

$$\Delta lnY_{it} = \rho_i Y_{it-1} + \sum_{j=1}^{p_i} \delta_{i,j} \Delta ln\, Y_{it-j} + \varepsilon_{it} \qquad (2)$$

where Y_{it} is a vector of our key endogenous variables: tourism income per capita growth and real GDP per capita growth.

The LLC (2002) assumes that the persistence parameters ρ_i are identical across cross-sections (i.e., $\rho_i = \rho$ for all i), whereas the lag order ρ_i may vary freely. This procedure tests the null hypothesis $\rho_i = 0$ for all i against the alternative hypothesis $\rho_i < 0$ for all i. Rejection of the null hypothesis indicates that the series is stationary.

The IPS (2003) test, which is also based on Eq. (2), differs from the LLC test by assuming ρ_i to be heterogeneous across cross-sections. The IPS tests the null hypothesis that all panels have a unit root, H_0: $\rho_i = 0$, for all i against the alternative hypothesis that a fraction, N_1, of all panels, N, that are stationary is nonzero, H_1: $\rho_i < 0$ for $i = 1, \ldots, N_1$. In particular, if we let N_1 denote the number of stationary panels, then the fraction N_1/N tends to a nonzero fraction as N tends to infinity. This allows some (but not all) of the panels to possess unit roots under the alternative hypothesis.

The LLC and IPS tests were executed on data both in levels and first differences of the natural logarithms and results were reported in Table 4. It is evident that all variables are stationary in first differences, while the level results indicate the presence of a unit root in general.

[Insert Table 4 around here]

3.3 Panel Granger-causality

Next, we examine the direction of causality among GDP per capita growth and tourism income per capita growth in a panel context. The Granger causality test is as follows:

$$\Delta lng_{it} = \alpha_{1t} + \sum_{l=1}^{mlg_i} \beta_{1i,l} \Delta ln\, g_{it-l} + \sum_{l=1}^{mlti_i} \gamma_{1i,l} \Delta ln\, ti_{it-l} + \varepsilon_{1it}$$

$$\Delta lnti_{it} = \alpha_{2t} + \sum_{l=1}^{mlg_i} \beta_{2i,l} \Delta ln\, g_{it-l} + \sum_{l=1}^{mlti_i} \gamma_{2i,l} \Delta ln\, ti_{it-l} + \varepsilon_{2it} \quad (3)$$

where index *i* refers to the country, *t* to the time period ($t = 1, \ldots, T$) and *l* to the lag. Δlng denotes the real GDP per capita growth, $\Delta lnti$ denotes tourism income per capita growth (as this is approximated by tourism receipts, tourism expenditures and tourist arrivals), and ε_{1it} and ε_{2it} are supposed to be white-noise errors.

For instance, according to model (3), in country group *i* there is Granger causality running only from *ti* to *g* if in the first equation not all γ_{1i} are zero but all β_{1i} are zero. The Chi^2 statistic tests the null of no causal relationship for any of the cross-section units, against the alternative hypothesis that causal relationships occur for at least one subgroup of the panel. Rejection of the null hypothesis indicates, for example, that *ti* Granger causes *g* for all *i*.

The results of the panel Granger-causality test are reported in Table 5.

[Insert Table 5 around here]

According to these results, some interesting patterns are revealed. In particular, it is evident that economic growth primarily drives tourism growth and this is a first indication that possibly it is the EDTG that prevails. Nevertheless, there are cases, such as in clusters with high level of government effectiveness, tourism specialization and tourism competitiveness (denoted as HIGH-GOVEFF, HIGH-TOURSPEC, HIGH-TTCI, respectively), where a bidirectional causality is demonstrated, suggesting that in countries with greater government effectiveness and tourism specialization there is a feedback effect between the two variables. An inference drawn from this preliminary analysis is that the choice of different criteria and clusters adds value to the discussion of the tourism-growth relationship, given that heterogeneous behavior is observed. Although economic growth is the prevailing driver, there is evidence of heterogeneity among the Granger causality test in many of the country groups, which motivates the use of generalized forecast error variance decomposition in our impulse response analysis (for more details, please refer to the next section).

4. Empirical methodology

4.1 Panel VAR approach

The PVAR methodology combines the traditional VAR approach, which treats all the variables in the system as endogenous, with the panel-data approach, which allows for unobserved individual heterogeneity. In its general form, our model can be written as follows:

$$\Delta lnY_{it} = A_0 + A_1\Delta lnY_{it-j} + A_2X_{it} + \mu_i + \lambda_t + \varepsilon_{it} \quad (4)$$

where Y_{it} is a vector of our key variables: tourism income and economic growth. The autoregressive structure allows all endogenous variables to enter the model with a number of j lags. The number of lags is determined with the use of the Akaike Information Criterion (AIC) and the Schwarz Bayesian Information Criterion (BIC). X_{it} is a vector of the exogenous variables, which are used as control variables, comprising: (i) labor force participation rate, capturing labor input, (ii) gross fixed capital formation as a % of GDP, measuring capital input, and (iii) imports plus exports over GDP, capturing the degree of openness. The data for the exogenous variables were obtained from the World Development Indicators database.

The advantage of the PVAR is the same as the advantage of any panel approach; i.e. it allows for the explicit inclusion of a fixed effect in the model, denoted μ_i, which captures all unobservable time-invariant factors at a country level. This is important for our purposes as the inclusion of these fixed effects allows each country to have a country specific level of each of the factors in the model while capturing other time-invariant factors, such as country size and number of heritage sites. However, the inclusion of fixed effects presents an estimation challenge, which arises in any model that includes lags of the dependent variables; the fixed effects are correlated with the regressors and therefore the mean-differencing procedure commonly used to eliminate fixed effects would create biased coefficients.

To avoid this problem, we use forward mean-differencing, also referred to as the 'Helmert procedure' (Arellano and Bover, 1995). This procedure removes only the forward mean, i.e., the mean of all the future observations available for each country-year. This transformation preserves the orthogonality between transformed variables and lagged regressors, which allows us to use lagged regressors as instruments and estimate the coefficients by system GMM. In our case the model will be just identified because the number of regressors will equal the number of instruments; therefore, system GMM is numerically equivalent to equation-by-equation 2SLS. Our PVAR estimation routine follows Love and Zicchino (2006) and Love and Rima (2014).

Another benefit of the panel data is its allowing for common time effects, λ_t, which are added to model (4) to capture any global (macroeconomic) shocks that may affect all countries in the same way. For example, time effects capture common factors such as the global financial crisis and other global risk factors. To deal with the time effects, we time difference all the variables prior to inclusion in the model, which is equivalent to putting time dummies in the system.

Model (4) is commonly referred to as reduced form, in a sense that each equation only contains lagged values of all other variables in the system. The prime benefit of the VAR system is that it allows the evaluation of the effect of the orthogonal shocks, i.e. the impact of a shock of one variable on another variable, while keeping all other variables constant. This is accomplished with the use of impulse-response functions, which identify the reaction of one variable to the innovations in another variable in the system, while holding all other shocks equal to zero. Nonetheless, since (i) the actual variance-covariance matrix of the errors is unlikely to be diagonal (e.g. errors are correlated), (ii) the results of the panel Granger causality tests revealed heterogeneous results among our variables/clusters and (iii) any particular ordering of the variables in our PVAR model would be hard to justify, we use the generalized PVAR framework (in the spirit of Koop et al., 1996; Pesaran and Shin, 1998), in which forecast error variance decompositions are invariant to the ordering of the variables.

To analyze the impulse-response functions and to evaluate their statistical significance, we estimate their confidence intervals. Since the matrix of impulse-response functions is constructed from the estimated VAR coefficients, their standard errors need to be taken into account. We generate the confidence intervals for the generalized impulse responses using Monte Carlo simulations.

5 Empirical findings

5.1 Findings on selected classifications

We begin our analysis with the full sample results as these are illustrated in Figure 5 (the number of lags for the VAR models is 5). Our analysis is based on international tourism receipts as a proxy for tourism growth.

[Insert Figure 5 around here]

We observe that for the full sample estimation our results coincide with the EDTG hypothesis, which implies that it is the economic performance of the sample countries that drives their tourism sectors. Nevertheless, the consideration of the full sample can only lead us to drawing some tentative conclusions, as the special qualities of our sample countries remain unmasked. Therefore, it is interesting to isolate their particular characteristics and examine each ones' effect on the tourism-economy relationship.

Initially, we divide our full sample of countries based on their standards of living and present the results in Figure 6.

[Insert Figure 6 around here]

We observe that destinations with the lowest standards of living confirm the EDTG. This is perhaps surprising given that we would expect that the countries with low living standards, which are mainly the less developed ones, would be more responsive to export activity. For example, our findings contradict Sequeira and Nunes (2008), who postulate that tourism exerts positive effects on the economic growth of weak economies. These authors merely focused their attention on the tourism-led economic growth hypothesis, without considering that the reverse might also hold true.

The EDTG can be explained by the structure of the tourism industry in these destinations, i.e. the number of outsiders and the high level of tourism income leakages from their local economies. As Perez and Juaneda (2000) explain, package deals contract out mass tourism destinations, meaning that visitors purchase their transport-accommodation package at home. This inevitably confines spending at destinations to pocket money payments and decreases tourism income considerably. The fact though that the economy drives the tourism sector in these countries can be potentially explained by the fact that weaker economies have limited ability to exploit their resources or develop their infrastructure in order to support their home industries, including tourism.

In destination countries with high standard of living there is no effect neither from tourism to the economy or the reverse. Nonetheless, it is reasonable to argue that high living standards are mostly found in mature economies where tourism is a peripheral and not a core economic activity. For example, the tourism sector in the US has a total contribution of about 8% of the national income, as estimated by the World Travel and Tourism Council.

In contrast, countries with moderate standards of living exhibit a clear bidirectional relationship, although the magnitude of the effects from economic shocks is materially higher. It should be underlined that a considerable number of the countries that comprise this cluster have popular tourism products (e.g. Croatia, Cyprus, Malta, Portugal and Spain) and tourism is an important industry for their economies. In particular, according to the World Travel and Tourism Council, the tourism industry in Croatia contributes 28.3% of its GDP, in Malta 28.1%, in Cyprus 21.3%, in Portugal 16.4% and in Spain 15.2%.

Overall, the results imply that the relationship between tourism and economic growth is influenced by the standards of living. We need to highlight here that part of this analysis is predicated upon the assumption that low living standards countries are also less developed and less competitive in tourism. Indeed, these assumptions are validated by the results obtained for the different levels of development and tourism competitiveness, which follow.

Our second classification is based on countries level of development. In this case, we have two sub-groups, namely developed and developing countries (see Figure 7).

[Insert Figure 7 around here]

For developed countries, we do not find evidence of any strong relationship between tourism and economic growth. However, in developing countries, and in contrast to developed countries, the EDTG relationship prevails (similarly to Ekanayake and Long, 2012), given that the responses of tourism receipts to economic-growth shocks are persistent. Our finding does not offer support to the argument that the contribution of tourism to economic growth is greater for developing countries than it is for the developed ones (see for instance, Dritsakis, 2012).

Next, Figure 8 exhibits our findings with regards to government effectiveness.

[Insert Figure 8 around here]

Interestingly, we observe that in countries with medium and high levels of government effectiveness, the relationship between tourism and the economy is bidirectional, yet once again, the magnitude of tourism-growth responses originating from economic-growth shocks seems to be higher, suggesting that the impact of economic performance is prevalent. By contrast, destinations with low levels of government effectiveness reveal unidirectional effects from economic growth to tourism. This is a rather important finding highlighting that high levels of bureaucracy (i.e. low level of government effectiveness) hinder economic activities and exert a negative influence on various economic sectors, including tourism. Similarly, when the levels of bureaucracy are lower, economic activity and investments are encouraged and facilitated by the state and thus, tourism activity is promoted.

As far as the influences of political regimes on the tourism-economy relationship are concerned, these are illustrated in Figure 9.

[Insert Figure 9 around here]

As illustrated by Figure 9, an EDTG relationship is witnessed in destinations with authoritarian or hybrid regimes (i.e. non-democratic countries). The interpretation of such finding is twofold; firstly, it can be argued that in many instances authoritarian practices create a turbulent environment for economic activities and hence, for all economic sectors including tourism. This incurs in non-democratic regimes as governments often display a rent-seeking behavior to gain political support rather than providing public goods and economic prosperity (Plumper and Martin, 2003).

Secondly, as it has been established by the political economy literature, it is common for economies which lack democracy to be controlled by a single individual or a small group of individuals. Such power imbalances do not allow the economy to grow or to spread the benefits of economic activity across society due to corruption (de Vaal and Ebben, 2011; Drury et al., 2006; Mo, 2001). Thus, we maintain that the way that the economy is controlled in non-democratic states influences tourism growth.

On the other hand, country clusters with ‘flawed’ or full democracies exhibit a bidirectional relationship. It is suggested that countries with either ‘flawed’ or full democratic regimes are able to exploit the maximum capacity of their economies and consequently, they are at a better position to support investment in their various sectors. Moreover, given that the benefits from each sector can be shared across society more fairly, it is reasonable to argue that sectorial performance (in our case, tourism) could assist economic growth. Interestingly, tourism-growth responses to economic-growth shocks have higher magnitude, especially in the flawed-democracy cluster. As mentioned previously, this is suggestive of the fact that even though positive tourism-growth shocks could lead to higher economic growth, the latter might not be substantial. By contrast, when economies with democratic traits experience positive economic shocks, these can considerably benefit their tourism sector.

When considering tourism specialization, defined by the number of WHS, we discern that regions of high specialization exhibit zero relationship between tourism and economic growth. The same applies to the medium specialization cluster, although there is a short-lived bidirectional causality (see Figure 10). Conversely, when tourism specialization is low, an economy-driven unidirectional causality is witnessed, which maintains the lead in the transmission of effects. These results are not in line with those of Arezki et al. (2009) and Chang et al. (2012), who maintain that tourism specialization, as reflected by the number of WHS, improves the effects of tourism on economic growth. However, once again, the aforementioned studies have concentrated only on the latter relationship, whereas in our case, we allow the data to reveal the ‘true’ relationship between tourism and the economy.

[Insert Figure 10 around here]

Hence, it appears that tourism specialization exerts a quasi-opposite effect on destinations, which might be explained variously. Firstly, we need to take into account the fact that it is the countries themselves that need to develop the nomination proposals for any site in their territory. Consequently, an inclusion to the list requires the use of resources (for conducting the necessary studies) and a certain level of government effectiveness and collaboration for meeting the nomination criteria (i.e. presenting a holistic approach as required by UNESCO). Given this set of circumstances, it can be argued that it is often the more government efficient countries, which tend to achieve the WHS status for a higher number of sites as compared to the less developed ones (for instance, there are 7 WHS in Egypt as compared to 41 and 40 sites in France and Germany, respectively).

Secondly, although WHS may also include places of natural significance, the vast majority of listed sites are of cultural character (i.e. 802 out of 1031). There are some destinations with a low level of tourism specialization which tend to be less popular for their cultural offer and more famous for their exoticism (for instance, the Bahamas, Dominican Republic, Mauritius and Seychelles). The so-called 'sea-sun-sand' tourism offer in these regions might not stimulate wider economic responses, perhaps due to the low spending character of 'sea-sun-sand' visitors (Taylor et al., 1993). Thirdly, some of the countries in the low specialization cluster have a significantly less developed tourism sector or significant geopolitical turbulence, which explains the fact that tourism does not affect their economic growth significantly (for example, Angola, Kazakhstan and Sierra Leone).

Finally, when considering the tourism competitiveness index, we observe that the results resemble those of the government effectiveness, political regime and tourism specialization clusters (see Figure 11), which provides additional robustness to our existing findings.

[Insert Figure 11 around here]

5.2 Robustness based on previous classifications

We further our analysis by employing the most commonly used country classifications, namely geographical region, income level and OECD membership, in order to compare the findings generated by the PVAR approach with those reported from the panel regression models[3].

We begin this analysis with the results of geographical regions. In particular, we observe that the impulse responses show that regions populated with weaker economies (such as the Sub-Saharan Africa, South-Central Asia and Latin America & Caribbean) exhibit EDTG. It is also important to note that countries that are popular international destinations, especially for their sea-sun-sand offer (e.g. Latin America & Caribbean), still exhibit EDTG, as in the case of the tourism specialization clusters. By contrast, the European region, which, on the whole, consists of countries with democratic traits and low levels of bureaucracy, reveals bidirectional causality. Finally, the East Asia & Pacific, as well as, the Middle East & North Africa regions confirm the no-causality hypothesis in the long run, although a short-lived bidirectional causality is evidenced. This might be explained by the fact that countries in these regions do not share similar economic footprints (for instance, the East Asia & Pacific region includes countries such as Australia and Japan on one hand, and Mongolia and Vanuatu, on the other hand).

Interestingly, these findings do not corroborate the previous evidence. For instance, Lee and Brahmasrene (2013) and Narayan et al. (2010) suggest that the TLEG holds for Europe and the Pacific regions, respectively. In addition, some authors report that a bidirectional causality exists in the Caribbean (e.g. Apergis and Payne, 2012), as well as in Latin America and Sub-Sahara Africa (e.g. Lee and Chang, 2008). Once again these differences in our

[3] For brevity, the actual impulse responses are not included in the paper but they are available upon request.

findings may stem from the fact that we do not *a priori* impose the direction of effects between tourism and economic growth.

Next, we report the findings for the four income groups (i.e. Low income, Low-Middle income, Upper-Middle income and High income groups), as these are established by the World Bank. In essence, we find that the results from this classification resemble our results based on the standards of living. In particular, for the two lower income categories (Figure 14) the EDTG prevails, although for the low income group this only holds for the short run. By contrast, as we move towards higher levels of income, the relationship changes into bidirectional, whereas at the top end of the income level no effects can be reported. Such findings resemble those by Eugenio-Martin et al. (2004), although only for the high-income countries.

Finally, we classify countries according to their OECD membership. Lee and Chang (2008) report that OECD countries exhibit TLEG, whereas a bidirectional relationship is evident for the non-OECD countries. Our findings do not offer support to the aforementioned results, but rather show that non-OECD countries exhibit an EDTG, whereas no relationship is reported for the OECD countries. These results corroborate the findings we obtained from the level of development clusters.

On a final note, as in the cases of standards of living, government effectiveness and political regimes classifications, the magnitude of the tourism growth responses to economic-growth shocks is materially higher, signifying the leading role of wider economic conditions in the performance of the tourism industry.

6. Concluding remarks and implications

This is a comprehensive study on the tourism-economic growth nexus across the globe that takes into account the key dynamics that influence tourism and broader economic performance.

Existing empirical evidence on the tourism-economic growth relationship has been inconclusive so far and has led to various, often contradictory, interpretations of their causal direction of effects. This might be the result of focusing on a single country or cluster of countries by using panel regression models. We suggest that panel regression can be rather problematic when addressing this question, as the existence of causal effects is considered given. In contrast, this study is the first that employs a PVAR approach, as well as PIRFs, to examine the tourism-economy nexus in such a comprehensive panel of countries, where the direction of effects is not *a priori* selected, but rather allows for simultaneous interaction among our main variables.

At the same time, this study seeks to evaluate the said relationship not by grouping countries based on a single characteristic but rather, by considering a set of six different criteria that influence the tourism-economy dynamics. Our broad sample of 113 counties allows us to draw generalizations more securely, whereas the use of three different proxies for tourism growth, i.e. international tourism receipts, tourist arrivals, and tourism expenditure as percentages of GDP, adds to the robustness of our findings.

The results cannot confirm the existence of the tourism-led economic growth relationship but rather, they offer some support to the economic-driven tourism growth hypothesis. This hypothesis holds for countries with low standards of living, developing economies, low government effectiveness, non-democratic regimes, low tourism specialization and low tourism competitiveness. On the contrary, countries characterized by higher levels of economic performance, democratic regimes and high tourism quality show a long-term bidirectional relationship. Such findings challenge the idea of tourism as a poverty alleviation driver and highlight the importance of quality of both political institutions and tourism offer in identifying the relationship between tourism and economic growth.

Based on this evidence, important policy implications can be drawn for countries with low government effectiveness, non-democratic regimes, low tourism specialization and tourism competitiveness. Firstly, it is crucial for these destination countries to devise policies that will limit tourism income leakages. This should be of primary concern given that these countries face two simultaneous problems. On the one hand, tourism income leakages limit the economic benefits at the destination and on the other hand, (mass) tourism activity in these countries creates additional costs due to strains on domestic resources and infrastructure (e.g. water shortages or waste management).

Possible ways to reduce income leakages include the expansion of tourism based on alternative tourism experiences (e.g. agricultural tourism) or the promotion of domestic tangible and intangible heritage that will motivate tourists to engage in activities that fall outside the ‘all-inclusive’ resort packages. Additionally, these countries need to improve their tourism value chain by encouraging collaborations between domestic government, local private sector and international tourism companies, so that key tourism resources and tourism processes can be primarily sourced in the destination country. Such policies can also lead to paths towards sustainability, promoting balanced growth, sound resources management and a more equal share of tourism income between local stakeholders and outsiders. Such targets also fall under the seventeen (17) Sustainable Development Goals of the UNWTO and the UN 2030 Agenda for Sustainable Development.

In addition, developing countries with significant tourism activity can also apply a safety net to their tourism industry with the view to isolate economy influences on their tourism performance in cases of negative economic shocks. For instance, they can offer better financing conditions for firms that operate in or support the tourism sector.

Nevertheless, it is important to highlight that the development of such strategies requires high levels of government effectiveness. The latter leads us to the second and most important policy implication of our findings. As aforementioned, the countries where tourism does not currently play a growth-enhancing role are those that lack government effectiveness, which is primarily caused by their non-democratic regimes. Thus, we maintain that unless these developing destinations move towards more democratic regimes, they will not experience such government effectiveness, which, in turn, will lead to tourism developmental policies that will generate positive spillovers to these economies (i.e. less leakages, higher tourism competitiveness and higher tourism specialization). Therefore, local poverty alleviation through tourism is critically determined by exogenous non-economic factors that relate to the quality of political institutions. This is also in line with Bramwell (2011) who maintains that sustainable tourism requires sound governance, which primarily requires a state that is 'politically accountable for its actions' (pp. 461-462), a characteristic of democratic regimes.

In parallel, countries that exhibit bidirectional causalities, namely countries with higher standards of living, government efficiency and competitiveness levels, need to pay more attention to their tourism sector as there exists the potential for tourism to foster their economic growth further. In particular, these economies should seek to maintain their competitive position by sustaining their standards of living and government efficiency levels. Furthermore, policymaking in these destinations should not consider tourism as a self-sustained industry, but rather as one that demands for continuous (re)investment in infrastructure and resource management. Finally, the bidirectional relationship between tourism and economic growth in these countries calls for the development of contingency plans in case of an economic downturn.

Despite the aforementioned, given that there are several intervening unobservable variables that might influence the tourism-growth relationship, our results cannot be treated as definite but they highlight that there is still plenty of scope to expand this line of inquiry further. An interesting avenue for future research is to investigate the potential indirect relationship between tourism and economic growth with the use of PVAR models and multiple endogenous variables (such as employment, infrastructure, corruption, public expenditure, etc.). Moreover, future studies could employ a similar clustering approach in order to evaluate cultural, market or even climate factors. Finally, the use of a d-dimensions clustering approach that allows the simultaneous identification of multiple segments based on multiple classification variables could provide additional insights into the tourism-growth relationship.

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References

Acemoglu, D., Johnson, S., Robinson, J. A., 2001. The colonial origins of comparative development: An empirical investigation. *The American Economic Review* 91 (5), 1369-1401.

Acemoglu, D., Johnson, S., Robinson, J. A., 2002. Reversal of fortune: Geography and institutions in the making of the modern world income distribution. *The Quarterly Journal of Economics* 117 (4), 1231-1294.

Acemoglu, D., Johnson, S., Robinson, J. A., Yared, P., 2008. Income and democracy. *The American Economic Review,* 808-842.

Antonakakis, N., Dragouni, M., Filis, G., 2015. Tourism and growth: The times they are a-changing. *Annals of Tourism Research* 50, 165-169.

Apergis, N., Payne, J. E., 2012. Research note: Tourism and growth in the Caribbean - Evidence from a panel error correction model. *Tourism Economics* 18 (2), 449-456.

Arellano, M., Bover, O., July 1995. Another look at the instrumental variable estimation of error-components models. *Journal of Econometrics* 68 (1), 29-51.

Arezki, R., Piotrowski, J. M., Cherif, R., 2009. Tourism Specialization and Economic Development: Evidence from the UNESCO World Heritage List. *IMF Working Papers* 09/176, International Monetary Fund.

Bramwell, B., 2011. Governance, the state and sustainable tourism: a political economy approach. *Journal of Sustainable Tourism* 19, 459-477.

Cellini, R., 2011. Is UNESCO recognition effective in fostering tourism? A comment on Yang, Lin and Han. *Tourism Management* 32 (2), 452-454.

Chang, C.-L., Khamkaew, T., McAleer, M., 2012. IV estimation of a panel threshold model of tourism specialization and economic development. *Tourism Economics* 18 (1), 5-41.

Chatziantoniou, I., Filis, G., Eeckels, B., Apostolakis, A., 2013. Oil prices, tourism income and economic growth: A structural VAR approach for European Mediterranean countries. *Tourism Management* 36, 331-341.

Chen, C.-F., Chiou-Wei, S. Z., 2009. Tourism expansion, tourism uncertainty and economic growth: New evidence from Taiwan and Korea. *Tourism Management* 30 (6), 812-818.

Cheng, K. M., 2012. Tourism demand in Hong-Kong: income, prices, and visa restrictions. *Current Issues in Tourism* 15 (3), 167-181.

Chou, M. C., 2013. Does tourism development promote economic growth in transition countries? A panel data analysis. *Economic Modelling* 33 (C), 226-232.

Copeland, B. R., 1991. Tourism, welfare and de-industrialization in a small open economy. *Economica*, 515-529.

de Vaal, A., Ebben, W., 2011. Institutions and the relation between corruption and economic growth. *Review of Development Economics* 15 (1), 108-123.

Dritsakis, N., 2012. Tourism development and economic growth in seven Mediterranean countries: A panel data approach. *Tourism Economics* 18 (4), 801-816.

Drury, A. C., Krieckhaus, J., Lusztig, M., 2006. Corruption, democracy, and economic growth. *International Political Science Review* 27 (2), 121-136.

Dutt, P., Mobarak, A. M., 2015. Democracy and policy stability. *International Review of Economics & Finance* 42, 499-517.

Eeckels, B., Filis, G., Leon, C., 2012. Tourism income and economic growth in Greece: Empirical evidence from their cyclical components. *Tourism Economics* 18 (4), 817-834.

Ekanayake, E. M., Long, A. E., 2012. Tourism development and economic growth in developing countries. *The International Journal of Business and Finance Research* 6 (1), 61-63.

Eugenio-Martin, J. L., Mart n Morales, N., Scarpa, R., 2004. Tourism and economic growth in Latin American countries: A panel data approach. Nota di Lavoro, Fondazione Eni Enrico Mattei (26).

Farmaki, A., Altinay, L., Botterill, D., Hilke, S., 2015. Politics and sustainable tourism: The case of Cyprus. *Tourism Management* 47, 178-190.

Fletcher, J., Morakabati, Y., 2008. Tourism activity, terrorism and political instability within the commonwealth: The cases of Fiji and Kenya. *International Journal of Tourism Research* 10 (6), 537-556.

Glaeser, E. L., Ponzetto, G. A., Shleifer, A., 2007. Why does democracy need education? *Journal of Economic Growth* 12 (2), 77-99.

Gooroochurn, N., Sinclair, M. T., 2005. Economics of tourism taxation: Evidence from Mauritius. *Annals of Tourism Research* 32 (2), 478-498.

Hartigan, J. A., Wong, M. A., 1979. Algorithm as 136: A k-means clustering algorithm. *Applied statistics*, 100-108.

Hazari, B. R., Sgro, P. M., 1995. Tourism and growth in a dynamic model of trade. *Journal of International Trade and Economic Development* 4 (2), 143-252.

Holzner, M., 2011. Tourism and economic development: The beach disease. *Tourism Management* 32 (4), 922-933.

Huang, C.-H., Tsaur, J.-R., Yang, C.-H., 2012. Does world heritage list really induce more tourists? Evidence from Macau. *Tourism Management* 33 (6), 1450-1457.

Im, K. S., Pesaran, M. H., Shin, Y., 2003. Testing for unit roots in heterogeneous panels. *Journal of Econometrics* 115 (1), 53-74.

Ivanov, S., Webster, C., 2013. Tourism's impact on growth: The role of globalisation. *Annals of Tourism Research* 41, 231-236.

Katircioglu, S. T., 2009. Revisiting the tourism-led-growth hypothesis for turkey using the bounds test and Johansen approach for cointegration. *Tourism Management* 30 (1), 17-20.

Koop, G., Pesaran, M. H., Potter, S. M., 1996. Impulse response analysis in nonlinear multivariate models. *Journal of Econometrics* 74 (1), 119-147.

Lanza, A., Pigliaru, F., 2000. Why are tourism countries small and fast-growing? In: *Tourism and sustainable economic development*. Springer, pp. 57-69.

Lee, C.-C., Chang, C.-P., 2008. Tourism development and economic growth: A closer look at panels. *Tourism Management* 29 (1), 180-192.

Lee, J. W., Brahmasrene, T., 2013. Investigating the influence of tourism on economic growth and carbon emissions: Evidence from panel analysis of the European Union. *Tourism Management* 38, 69-76.

Levin, A., Lin, C.-F., James Chu, C.-S., 2002. Unit root tests in panel data: Asymptotic and finite-sample properties. *Journal of Econometrics* 108 (1), 1-24.

Love, I., Rima, T. A., 2014. Macro-financial linkages in Egypt: A panel analysis of economic shocks and loan portfolio quality. Journal of International Financial Markets, *Institutions and Money* 28 (0), 158-181.

Love, I., Zicchino, L., 2006. Financial development and dynamic investment behavior: Evidence from panel VAR. *The Quarterly Review of Economics and Finance* 46 (2), 190-210.

Mo, P. H., 2001. Corruption and economic growth. *Journal of Comparative Economics* 29 (1), 66-79.

Narayan, P., Narayan, S., Prasad, A., Prasad, B., 2010. Tourism and economic growth: A panel data analysis for pacific island countries. *Tourism Economics* 16 (1), 169-183.

Parrilla, J. C., Font, A. R., Nadal, J. R., 2007. Tourism and long-term growth a Spanish perspective. *Annals of Tourism Research* 34 (3), 709-726.

Payne, J. E., Mervar, A., 2010. Research note: The tourism-growth nexus in Croatia. *Tourism Economics* 16 (4), 1089-1094.

Perez, E. A., Juaneda, S. C., 2000. Tourist expenditure for mass tourism markets. *Annals of Tourism Research* 27 (3), 624-637.

Pesaran, H. H., Shin, Y., 1998. Generalized impulse response analysis in linear multivariate models. *Economics Letters* 58 (1), 17-29.

Plumper, T., Martin, C. W., 2003. Democracy, government spending, and economic growth: A political-economic explanation of the Barro-effect. *Public Choice* 117 (1-2), 27-50.

Ridderstaat, J., Croes, R., Nijkamp, P., 2016. The tourism development-quality of life nexus in a small island destination. *Journal of Travel Research* 55(1), 79-94.

Rodriguez, V., Fernandez-Mayoralas, G., Rojo, F., 1998. European retirees on the Costa del Sol: a cross-national comparison. *International Journal of Population Geography* 4, 183-200.

Saveriades, A., 2000. Establishing the social tourism carrying capacity for the tourist resorts of the east coast of the Republic of Cyprus. *Tourism management* 21 (2), 147-156.

Schubert, S. F., Brida, J. G., Risso, W. A., 2011. The impacts of international tourism demand on economic growth of small economies dependent on tourism. *Tourism Management* 32 (2), 377-385.

Seetanah, B., 2011. Assessing the dynamic economic impact of tourism for island economies. *Annals of Tourism Research* 38 (1), 291-308.

Sequeira, T. N., M. Nunes, P., 2008. Does tourism influence economic growth? A dynamic panel data approach. *Applied Economics* 40 (18), 2431-2441.

Song, H., Wong, K. K. F., 2003. Tourism demand modeling: A time-varying parameter approach. *Journal of Travel Research* 42 (1), 57-64.

Tang, C. F., 2011. Is the tourism-led growth hypothesis valid for Malaysia? A view from disaggregated tourism markets. *International Journal of Tourism Research* 13 (1), 97-101.

Tang, C.-H. H., Jang, S. S., 2009. The tourism-economy causality in the United States: A sub-industry level examination. *Tourism Management* 30 (4), 553-558.

Taylor, D. T., Fletcher, R. R., Clabaugh, T., 1993. A comparison of characteristics, regional expenditures, and economic impact of visitors to historical sites with other recreational visitors. *Journal of Travel Research* 32 (1), 30-35.

Tosun, C., 2002. Host perceptions of impacts: A comparative tourism study. *Annals of Tourism Research* 29 (1), 231-253.

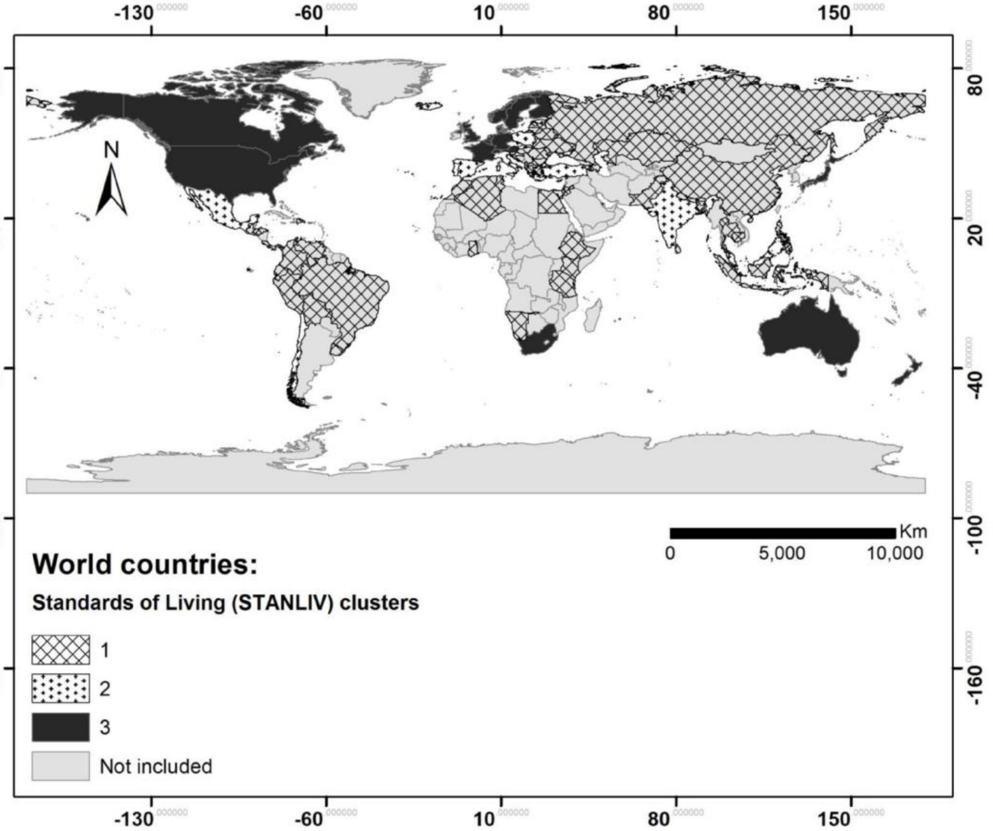
UNESCO, 1972. *Convention concerning the protection of the world cultural and natural heritage*. Paris: UNESCO.

UNWTO, SNV, 2010. *Manual on Tourism and Poverty Alleviation Practical Steps for Destinations*. Madrid: UNWTO & SNV.

Yang, C.-H., Lin, H.-L., Han, C.-C., 2010. Analysis of international tourist arrivals in China: The role of World Heritage Sites. *Tourism Management* 31 (6), 827-837.

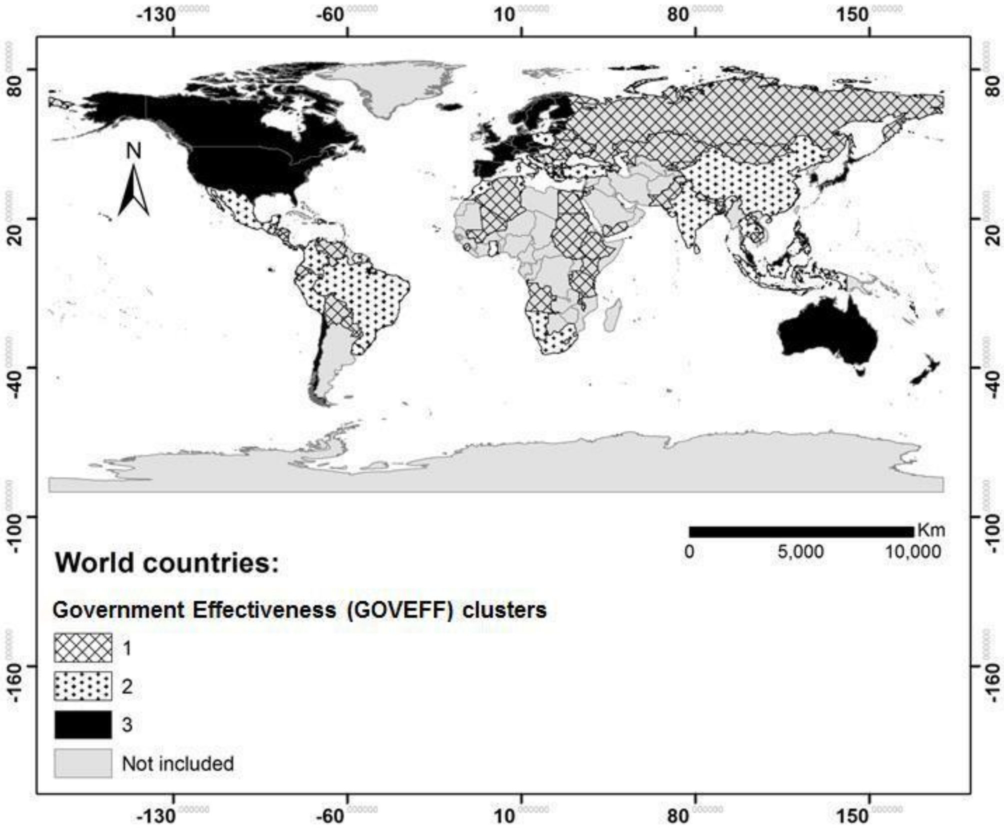
FIGURES

Figure 1: Standards of living classification



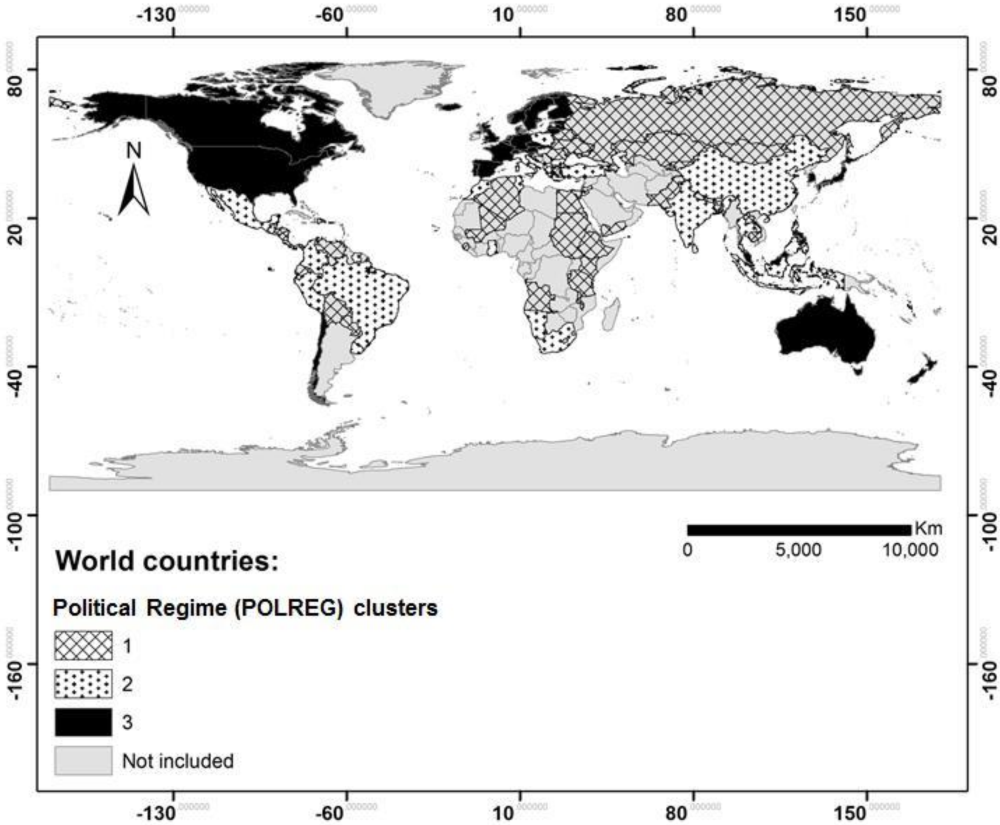
Note: Moving from cluster 1 to 3 this figure demonstrates countries with the lowest to the highest standards of living. Clusters in this classification are denoted as Low, Medium and High Standards of Living.

Figure 2: Government effectiveness classification



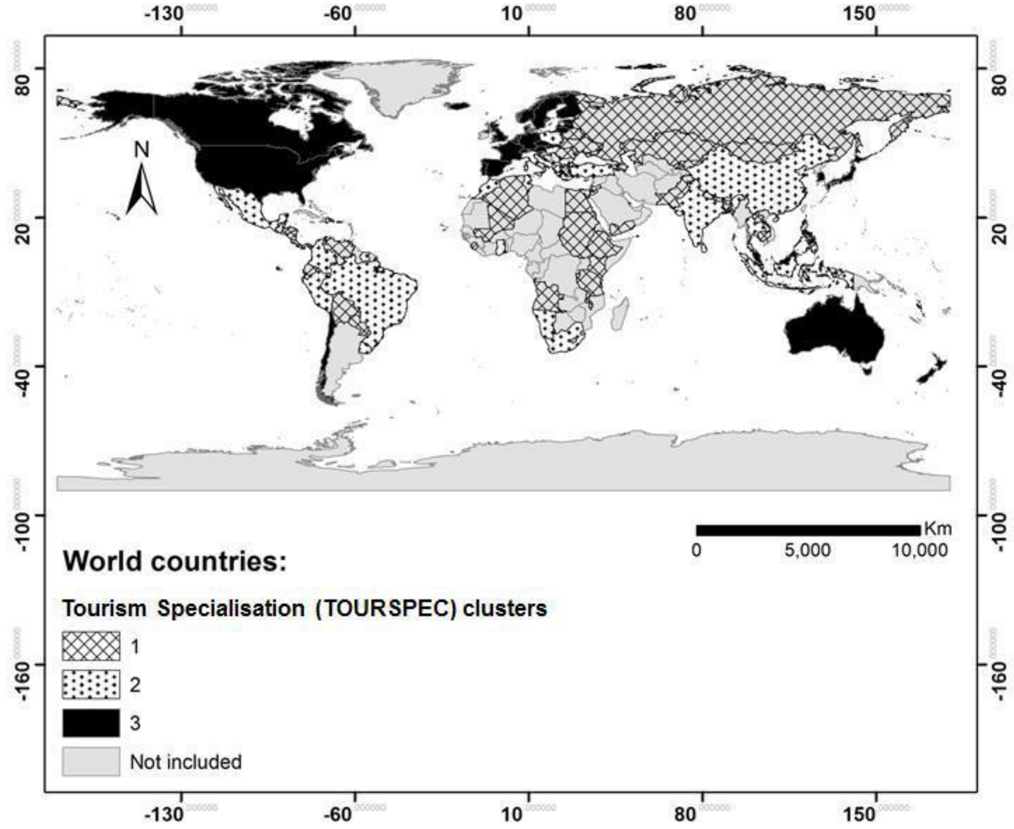
Note: Moving from cluster 1 to 3 this figure demonstrates the countries with the least government effectiveness to the most government effectiveness. Clusters in this classification are denoted as Low, Medium and High Government Effectiveness.

Figure 3: Political regime classification



Note: Cluster 1 denotes authoritarian or hybrid regimes (i.e. a mix of democratic regimes with autocratic traits), Cluster 2 refers to democracy and Cluster 3 to full democracy. Clusters in this classification are denoted as Non-Democratic, Flawed Democracies and Full Democracies.

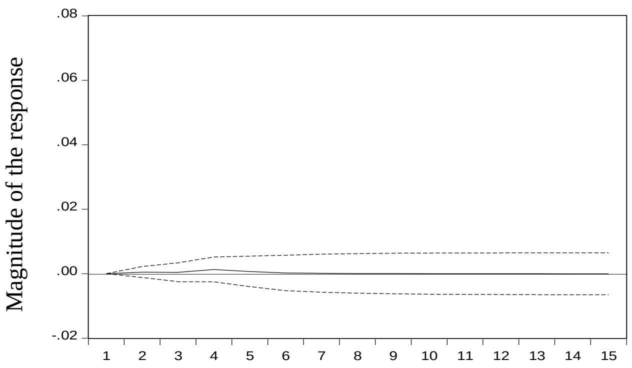
Figure 4: Tourism specialization classification

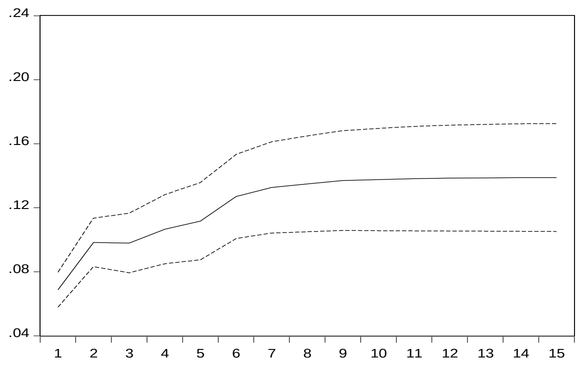


Note: Moving from cluster 1 to 3 this figure demonstrates countries from the lowest to the highest levels of tourism specialization. Clusters in this classification are denoted as Low, Medium and High Tourism Specialization.

Figure 5: Impulse responses based on the full sample estimation for the period 1995-2014.

Accumulated Response of Economic Growth to International Tourism Receipts shocks	Accumulated Response of International Tourism Receipts to Economic Growth shocks

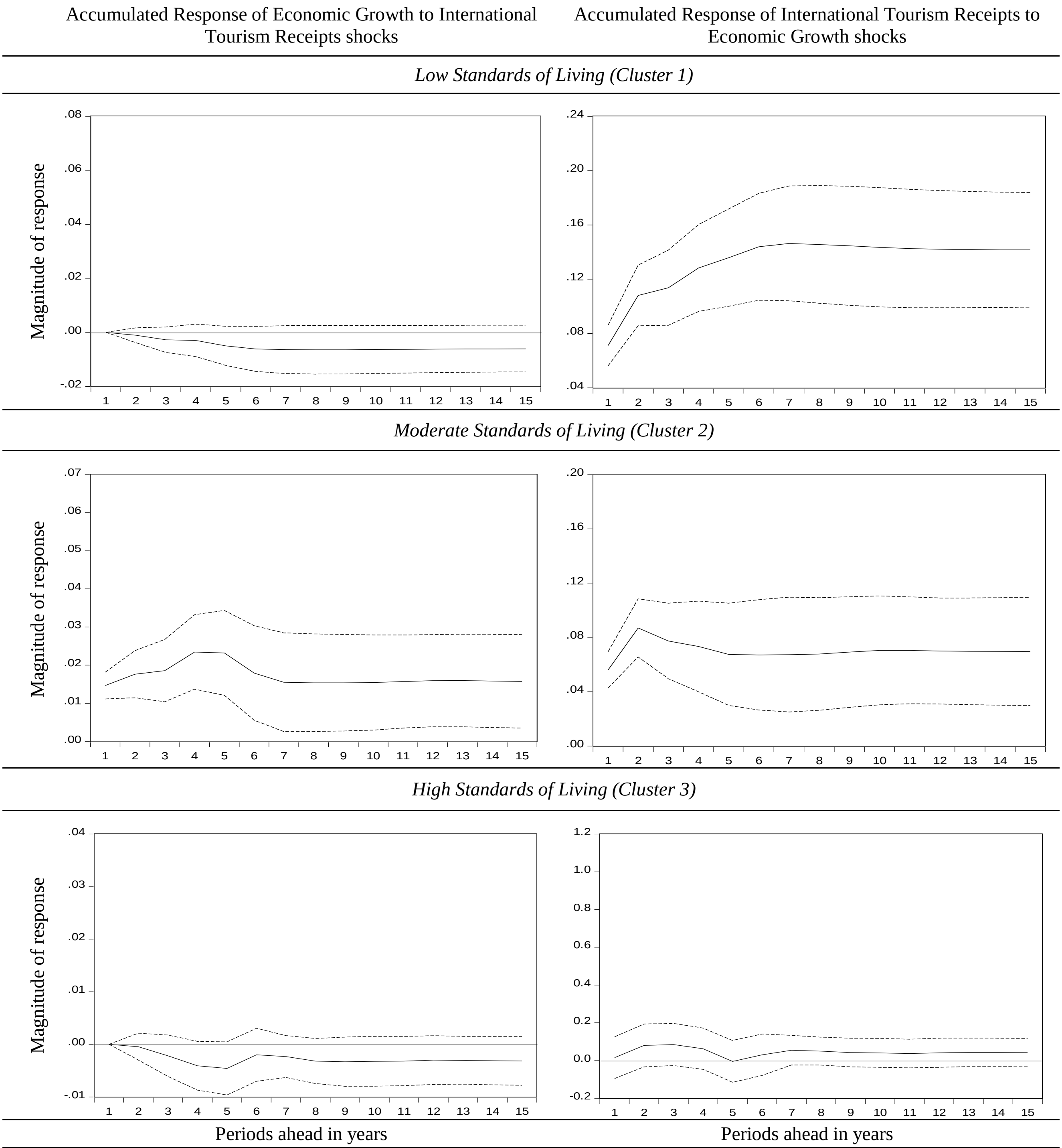




Periods ahead in years	Periods ahead in years

Note: Estimations are based on per capita real GDP growth and per capita international tourism receipts growth. The solid line denotes the point estimate of the impulse response, whereas the dotted lines represent its confidence intervals. The impulse responses of tourism growth (economic growth) refer to positive economic growth (tourism growth) shocks. Thus, positive and significant impulse responses of tourism growth (economic growth) (i.e. the point estimate of the impulse response and confidence intervals are all above zero) suggests that positive economic (tourism) shocks lead to higher tourism (economic) growth. The opposite holds true when the impulse response in negative. Finally, an insignificant impulse response (i.e. when the confidence intervals are above and below the zero line) suggests that positive shocks to one variable do not lead to any effects for the other variable

Figure 6: Impulse responses for the standards of living clusters estimation for the period 1995-2014.

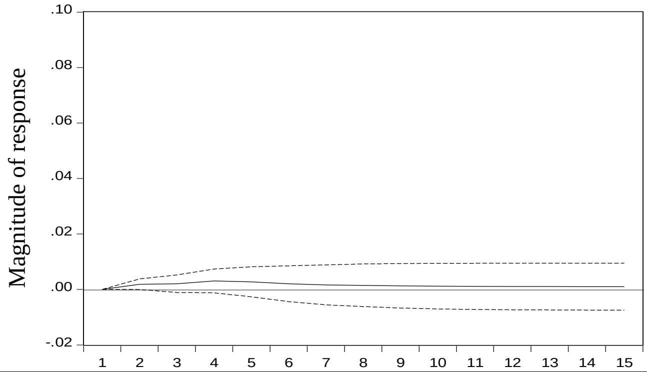


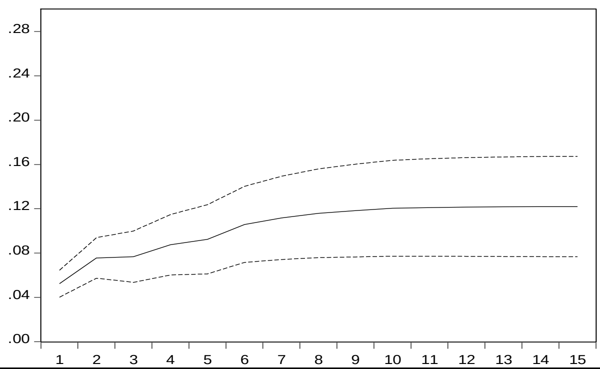
Note: Please see note in Figure 5.

Figure 7: Impulse responses for the level of development clusters estimation for the period 1995-2014.

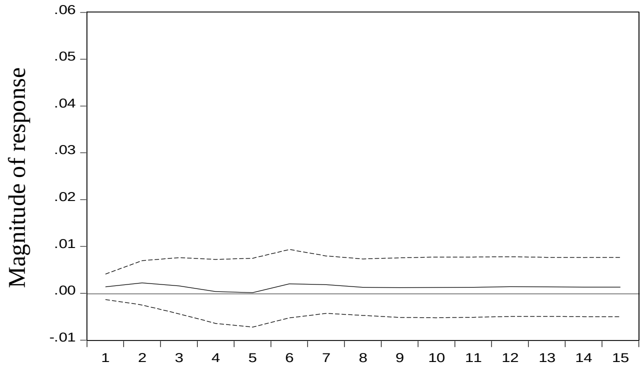
Accumulated Response of Economic Growth to International Tourism Receipts shocks	Accumulated Response of International Tourism Receipts to Economic Growth shocks

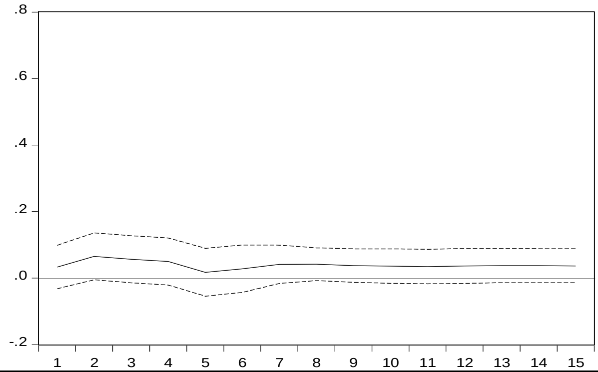
Developing countries





Developed countries





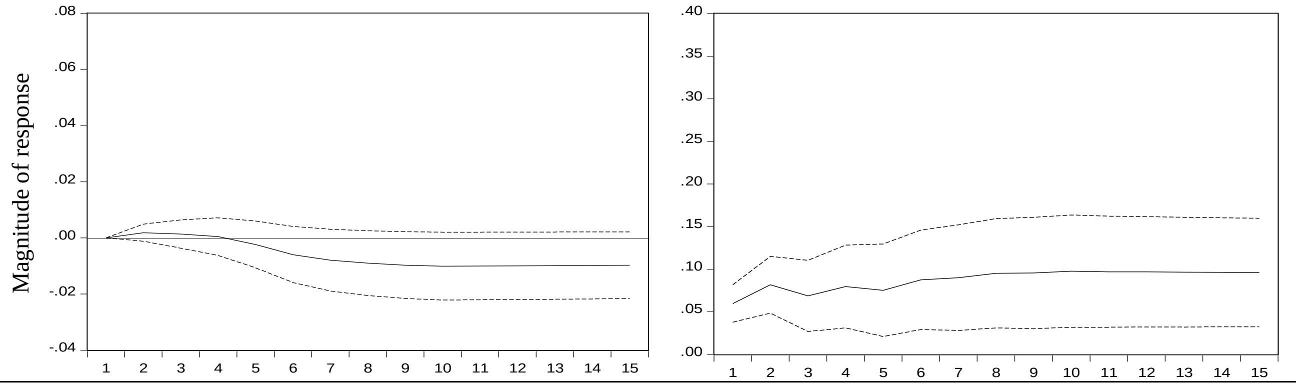
Periods ahead in years	Periods ahead in years

Note: Please see note in Figure 5.

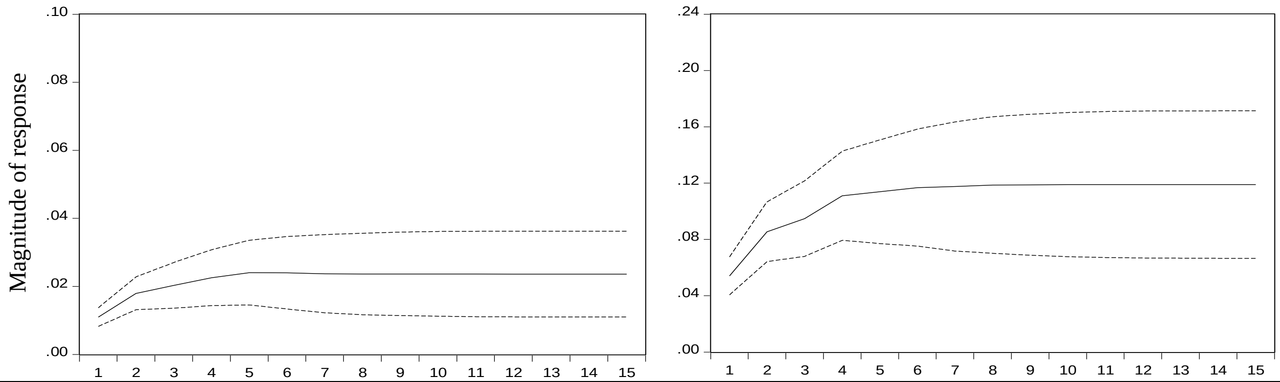
Figure 8: Impulse responses for the government effectiveness clusters estimation for the period 1995-2014.

Accumulated Response of Economic Growth to International Tourism Receipts shocks	Accumulated Response of International Tourism Receipts to Economic Growth shocks

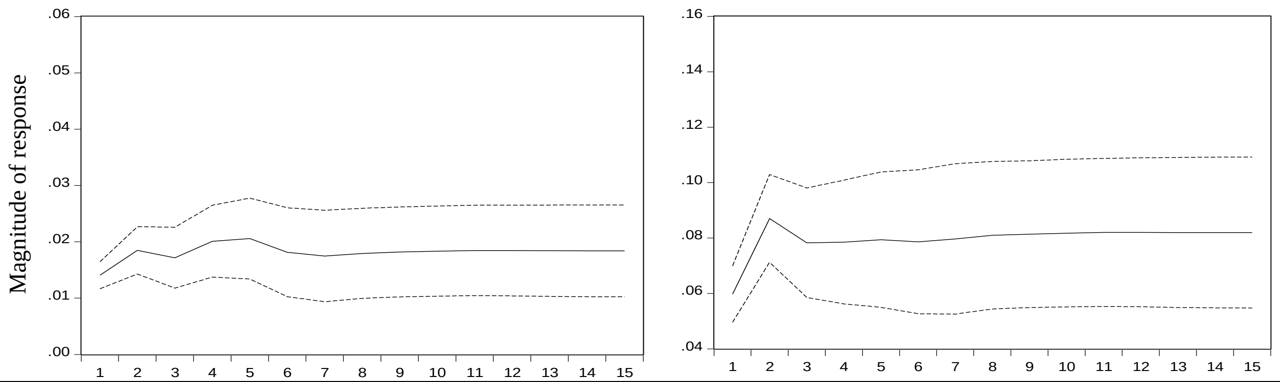
Low Level of Government Effectiveness (Cluster 1)



Moderate Level of Government Effectiveness (Cluster 2)



High Level of Government Effectiveness (Cluster 3)



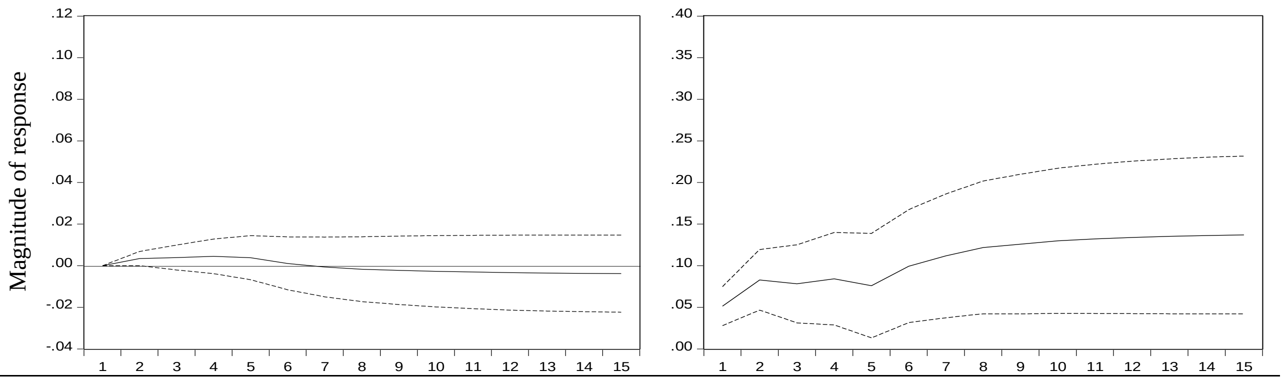
Periods ahead in years	Periods ahead in years

Note: Please see note in Figure 5.

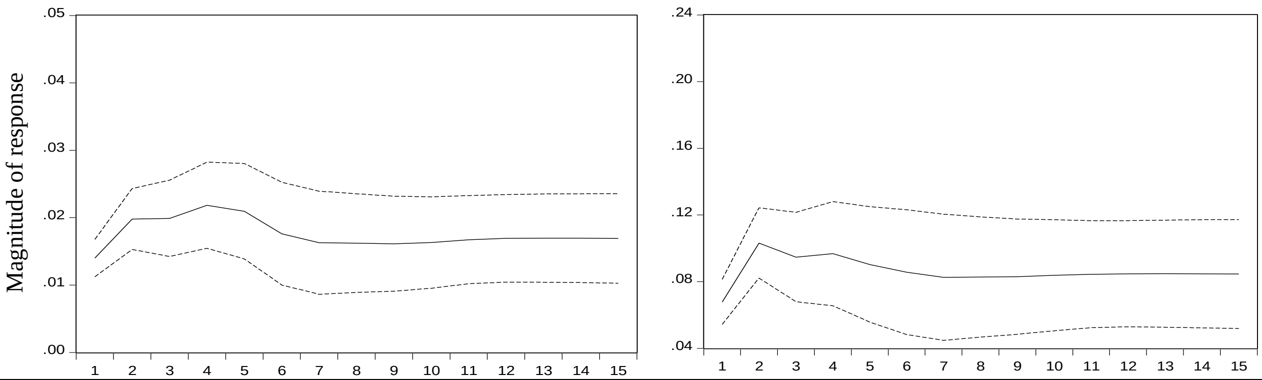
Figure 9: Impulse responses for the political regime clusters estimation for the period 1995-2014.

Accumulated Response of Economic Growth to International Tourism Receipts shocks	Accumulated Response of International Tourism Receipts to Economic Growth shocks

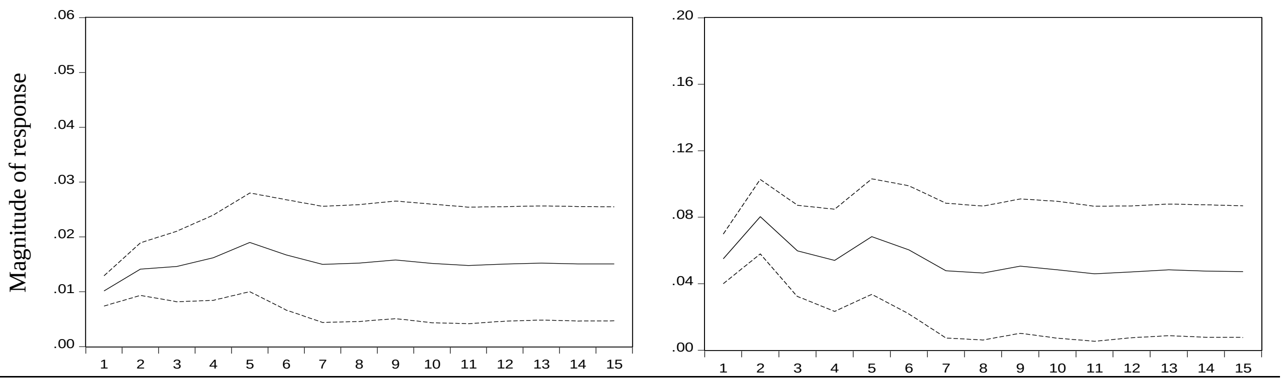
Authoritarian or hybrid regimes (Cluster 1)



"Flawed" democracy (Cluster 2)



Full democracy (Cluster 3)



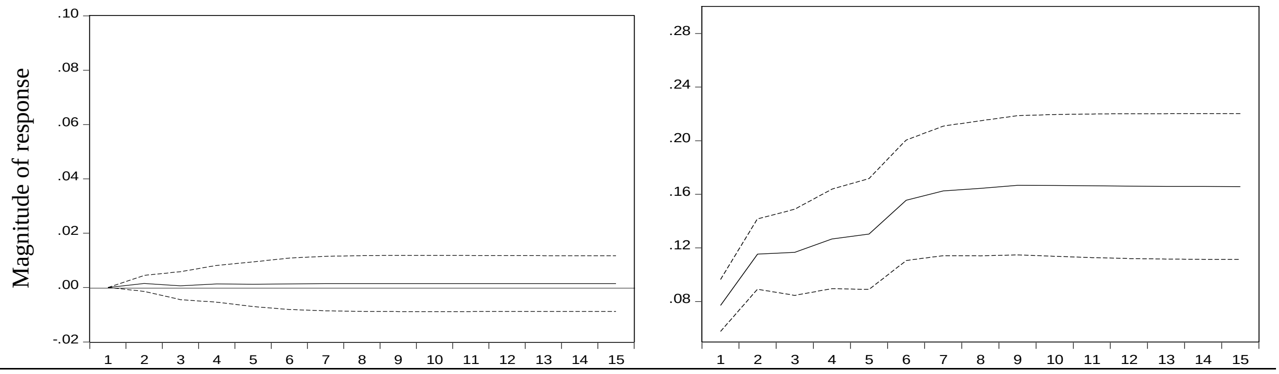
Periods ahead in years	Periods ahead in years

Note: Please see note in Figure 5.

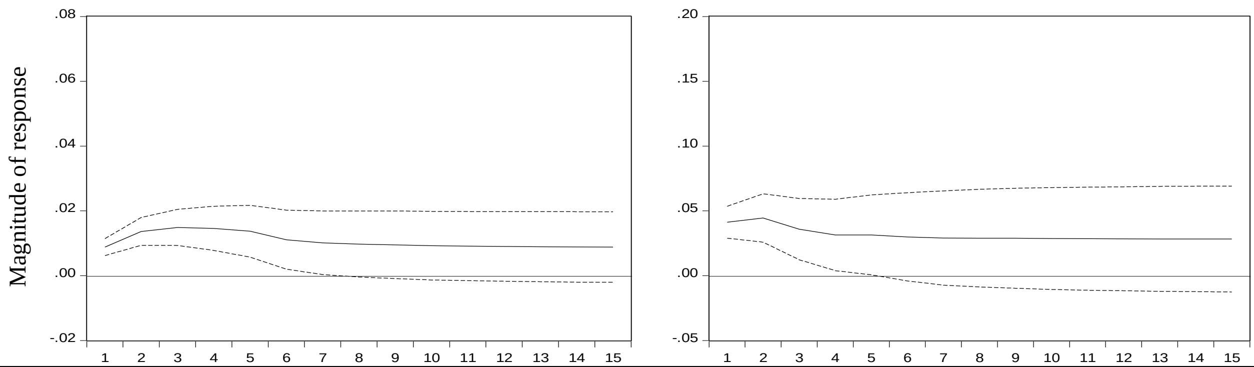
Figure 10: Impulse responses for the tourism specialisation clusters estimation for the period 1995-2014.

Accumulated Response of Economic Growth to International Tourism Receipts shocks	Accumulated Response of International Tourism Receipts to Economic Growth shocks

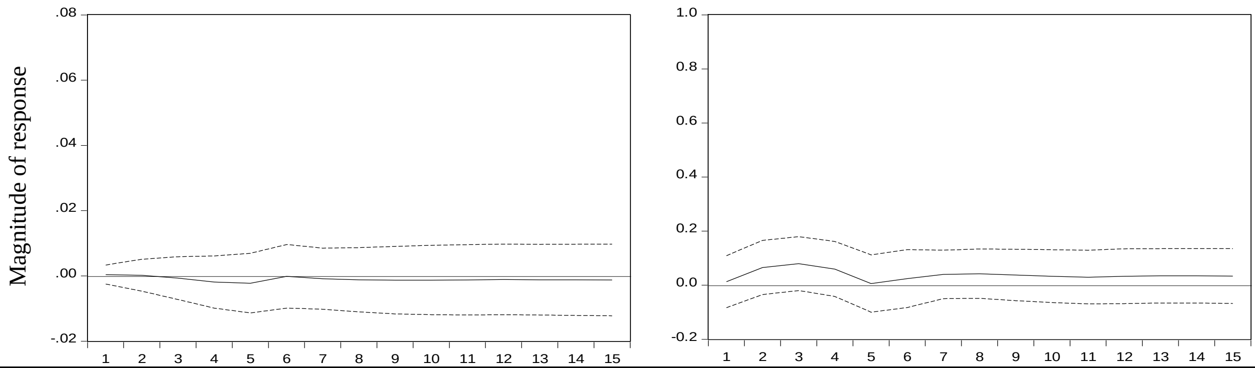
Low Tourism Specialisation (Cluster 1)



Medium Tourism Specialisation (Cluster 2)



High Tourism Specialisation (Cluster 3)



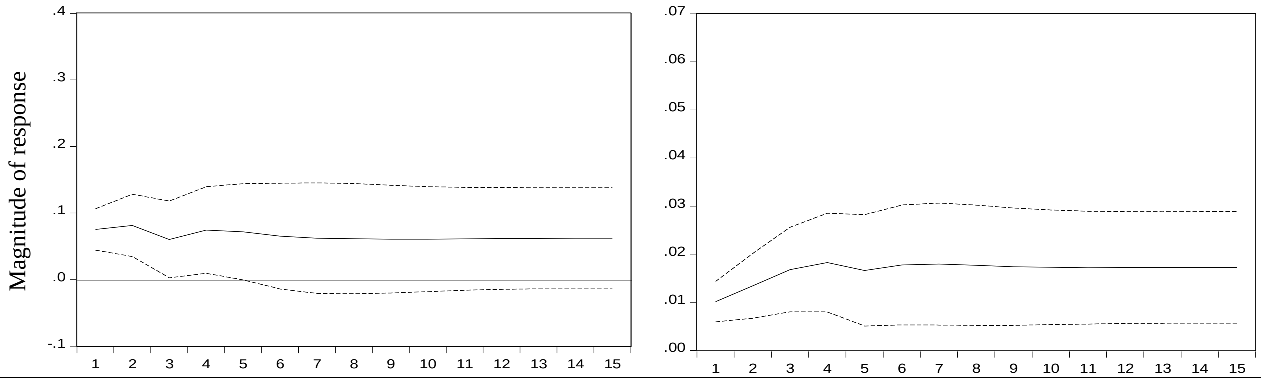
Periods ahead in years	Periods ahead in years

Note: Please see note in Figure 5.

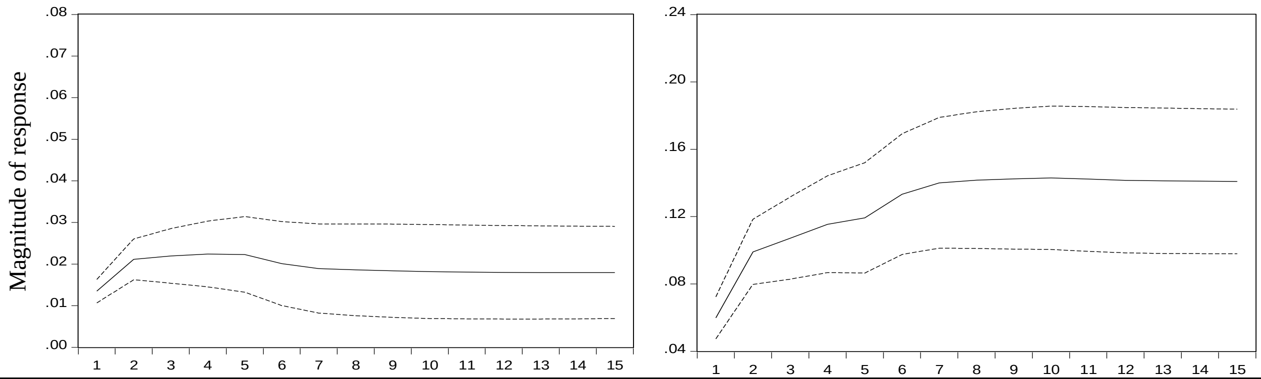
Figure 11: Impulse responses for the tourism competitiveness clusters estimation for the period 1995-2014.

Accumulated Response of Economic Growth to International Tourism Receipts shocks	Accumulated Response of International Tourism Receipts to Economic Growth shocks

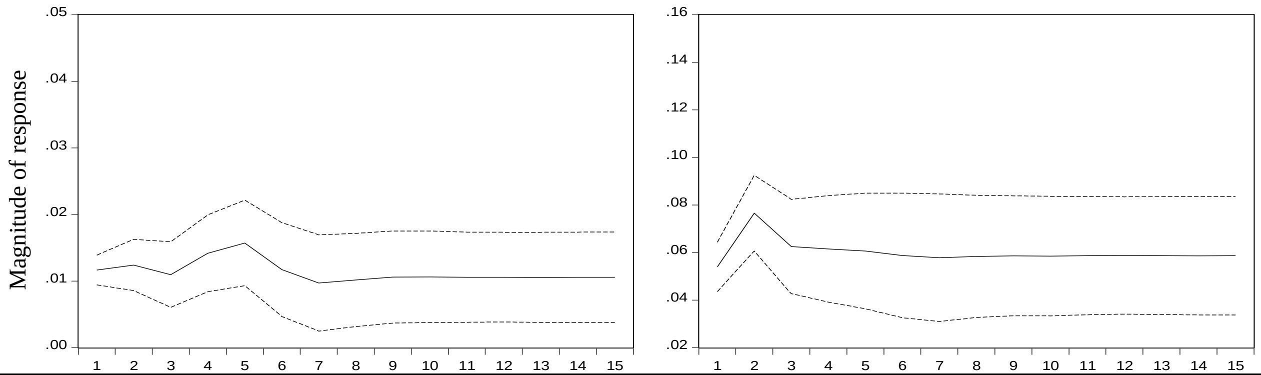
Low Tourism Competitiveness (Cluster 1)



Medium Tourism Competitiveness (Cluster 2)



High Tourism Competitiveness (Cluster 3)



Periods ahead in years	Periods ahead in years

Note: Please see note in Figure 5.

Tables

Table 1: Tourism competitiveness classification

Low	*Medium*	*High*
Burundi	Kazakhstan	Malaysia
Sierra Leone	Cape Verde	Greece
Lesotho	Dominican Republic	Czech Republic
Yemen	Egypt	Estonia
Algeria	Colombia	Cyprus
Mali	Ecuador	Italy
Malawi	Philippines	Korea, Rep.
Bangladesh	Armenia	Malta
Pakistan	Albania	Luxembourg
Ethiopia	Azerbaijan	Norway
Ghana	Macedonia, FYR	Denmark
Paraguay	Ukraine	Portugal
Venezuela	Sri Lanka	Belgium
Nepal	Peru	Finland
Kyrgyz Republic	Indonesia	Iceland
Bolivia	Morocco	Hong Kong SAR
Tanzania	Romania	Japan
Cambodia	India	Netherlands
El Salvador	South Africa	Australia
Moldova	Russian Federation	New Zealand
Mongolia	Jordan	Singapore
Suriname	Uruguay	Sweden
Guatemala	Mauritius	Canada
Kenya	Chile	France
Nicaragua	Bahrain	United States
Honduras	Slovak Republic	Spain
Namibia	Israel	United Kingdom
	Puerto Rico	Austria
	Brazil	Germany
	Bulgaria	Switzerland
	Lithuania	
	Latvia	
	Costa Rica	
	Turkey	
	China	
	Mexico	
	Poland	
	Thailand	
	Hungary	
	Seychelles	
	Panama	
	Slovenia	
	Croatia	

Notes: Moving from cluster 1 to 3 this table presents the countries with the lowest to the highest levels of tourism competitiveness (TTCI).

Table 2: Descriptive Statistics - Full sample & by level of development

	Mean	Maximum	Minimum	Std. Dev.	Skewness	Kurtosis	JB	Obs.
All (113) countries								
GDPPC	14869.13	110001.0	182.941	18813.98	1.88322	6.85166	2636.110*	2260
ITARR	0.60701	9.47578	0.025228	0.967775	3.57152	20.6300	32867.24*	2260
ITEXP	387.913	7719.226	0.30194	758.726	4.81289	35.2507	102893.1*	2260
ITRCPT	637.580	10401.94	0.07297	1134.787	3.84269	22.7684	40860.16*	2260
GDPPCGR	0.025838	0.28541	-0.16288	0.037569	-0.11509	7.23083	1549.190*	2151
ITARRGR	0.04714	13.85568	-13.76727	0.45958	-0.00709	789.456	53321075*	2151
ITEXPGR	0.06317	2.43080	-1.11225	0.21890	1.71334	21.68041	31125.39*	2151
ITRCPTGR	0.06740	3.55731	-1.87546	0.23740	2.16721	36.00087	95597.75*	2151
Developed (34) countries								
	Mean	Maximum	Minimum	Std. Dev.	Skewness	Kurtosis	JB	Obs.
GDPPC	34948.34	110001.0	3781.900	20863.44	0.938671	4.190578	140.0203*	680
ITARR	0.880889	3.954474	9.34E-07	0.714136	1.571248	5.189492	415.6262*	680
ITEXP	865.9132	7719.226	19.04592	1052.382	3.730062	20.55820	10311.74*	680
ITRCPT	1049.867	10401.94	13.61695	1293.933	4.220183	25.61264	16506.19*	680
GDPPCGR	0.019894	0.122939	-0.157351	0.032874	-0.671513	6.794760	436.1556*	646
ITARRGR	0.032199	13.85568	-13.76727	0.774988	0.046000	313.2784	2591339*	646
ITEXPGR	0.050609	1.892945	-0.779219	0.167103	2.095300	28.64941	18180.95*	646
ITRCPTGR	0.051938	1.842766	-0.634058	0.162594	2.698820	31.22708	22230.54*	646
Developing (79) countries								
	Mean	Maximum	Minimum	Std. Dev.	Skewness	Kurtosis	JB	Obs.
GDPPC	5766.553	51440.80	182.9410	7180.602	2.650922	11.59346	6372.323*	1580
ITARR	0.482853	9.475787	-0.025228	1.039710	4.139668	23.55142	30681.76*	1580
ITEXP	171.2196	4478.104	0.301946	429.5416	5.659993	41.99173	103031.1*	1580
ITRCPT	450.6773	6448.177	0.072975	1000.726	3.614171	17.23016	15921.65*	1580
GDPPCGR	0.028533	0.285410	-0.16288	0.039230	-0.028318	7.153890	1024.694*	1501
ITARRGR	0.053925	1.368689	-1.551247	0.186020	0.124815	14.93669	8451.848*	1501
ITEXPGR	0.068875	2.430803	-1.112252	0.238554	1.562218	19.14297	16052.48*	1501
ITRCPTGR	0.074409	3.557311	-1.875468	0.264188	1.951986	31.95550	50686.20*	1501

Note: JB denote Jarque-Bera. * indicates 1 percent levels of significance. GR at the end of the acronym indicates growth rates. For brevity, we do not present the descriptive statistics for each classification and cluster, but rather they are available upon request.

Table 3: Clusters statistics

Cluster name	Cluster Group	Maximum	Minimum
STANLIV	LOW-STANLIV	11245.8	182.94
	MEDIUM-STANLIV	47684.3	13298.6
	HIGH-STANLIV	110001.0	51440.8
GOVEFF	LOW-GOVEFF	-0.29	-1.71
	MEDIUM-GOVEFF	0.59	-0.20
	HIGH-GOVEFF	2.19	0.69
POLREG	NON-DEM	5	-8
	FLAWED-DEM	9	6
	FULL-DEM	10	10
TOURSPEC	LOW-TOURSPEC	3	0
	MEDIUM-TOURSPEC	9	4
	HIGH-TOURSPEC	49	10
TTCI	LOW-TTCI	3.46	2.62
	MEDIUM-TTCI	4.38	3.48
	HIGH-TTCI	5.31	4.41

Note: The figures related to the STANLIV denote real GDP per capita, while the figures for the remaining clusters denote index scores. STANLIV=Standards of Living, GOVEFF=Government Effectiveness, POLREG=Political Regime, DEM=Democracy, TOURSPEC=Tourism Specialisation, TTCI=Tourism Competitiveness.

Table 4: Panel unit root test results

		H_0: Unit root			
	Variables	LLC		IPS	
All countries	GDPPC	12.4327	[1.0000]	14.1372	[1.0000]
	ITARRPC	7.6481	[1.0000]	10.9234	[1.0000]
	ITEXPPC	10.4796	[1.0000]	12.2453	[1.0000]
	ITRCPTPC	7.7263	[1.0000]	12.9006	[1.0000]
	GDPPCGR	-26.1668***	[0.0000]	-18.1587***	[0.0000]
	ITARRPCGR	-32.9787***	[0.0000]	-28.5058***	[0.0000]
	ITEXPPCGR	-30.9774***	[0.0000]	-27.2155***	[0.0000]
	ITRCPTPCGR	-30.6832***	[0.0000]	-27.0232***	[0.0000]

Note: The numbers in brackets denote p-values. The LLC and IPS tests are performed using the Newey-West bandwidth selection with Barlett Kernel, and the Schwartz Bayesian Criterion is used to determine to optimal lag length. ITARRPC = per capita International Tourist Arrivals, ITEXPPC = per capita International Tourism Expenditure, ITRCPTPC = per capita International Tourism Receipts. GR at the end of the acronym indicates growth rates. *, ** and *** indicate rejection of the null hypothesis at the 10, 5 and 1 percent levels of significance, respectively. For brevity, we do not show the panel unit root tests for the remaining clusters as the results are the same as in the case of the full sample presented in this table.

Table 5: Panel causality tests between tourism growth and economic growth

	Null hypothesis					
	ITARRGR $\nRightarrow$ GDPPCGR	***ITEXPGR $\nRightarrow$ GDPPCGR***	***ITRCPTGR $\nRightarrow$ GDPPCGR***	***GDPPCGR $\nRightarrow$ ITARRGR***	***GDPPCGR $\nRightarrow$ ITEXPGR***	***GDPPCGR $\nRightarrow$ ITRCPTGR***
All countries	***0.42251***	***1.43612***	***0.47817***	***6.54712******	***9.25433******	***11.9527******
Developed countries	***0.68758***	***1.76377***	***0.88554***	***1.57349***	***13.8156******	***7.39258******
Developing countries	***2.0976****	***1.76836***	***0.42273***	***0.64148***	***3.10119*****	***6.69624******
LOW-TTCI	***2.98362*****	***2.25554*****	***0.92936***	***0.95663***	***2.20400*****	***0.69253***
MEDIUM-TTCI	***1.9094****	***1.12167***	***1.79863***	***2.17920****	***9.65024******	***8.16772******
HIGH-TTCI	***0.84887***	***4.79356******	***5.98438******	***1.11335***	***8.56673******	***4.62663******
LOW-TOURSPEC	***3.11593******	***1.79403***	***0.60750***	***0.59097***	***3.01472*****	***6.18331******
MEDIUM-TOURSPEC	***2.83200*****	***0.99243***	***0.64103***	***0.37865***	***7.93711******	***1.40448***
HIGH-TOURSPEC	***0.89835***	***4.32868******	***5.28825******	***0.89528***	***5.87009******	***3.62605******
LOW-STANLIV	***2.0321****	***0.80589***	***1.20829***	***2.26753*****	***7.89984******	***5.91502******
MEDIUM-STANLIV	***1.36678***	***1.85052***	***4.13746******	***1.14812***	***8.18848******	***3.47685******
HIGH-STANLIV	***1.66726***	***4.73791******	***3.63005******	***0.82176***	***3.50857******	***1.35744***
LOW-GOVEFF	***2.38925*****	***1.35917***	***0.59668***	***0.83809***	***1.79462***	***2.76559*****
MEDIUM-GOVEFF	***0.86209***	***1.40148***	***1.25188***	***1.61669***	***4.35269******	***4.25721******
HIGH-GOVEFF	***0.62457***	***4.18154******	***3.04294******	***1.48711***	***11.6923******	***4.76845******
NON-DEM	***3.30516******	***1.59954***	***0.56002***	***0.79979***	***2.53273*****	***2.85132*****
FLAWED-DEM	***1.47912***	***0.99655***	***2.09423****	***0.97755***	***6.47258******	***4.39774******
FULL-DEM	***0.93172***	***3.11418******	***1.26786***	***0.77182***	***5.75866******	***3.81469******

Note: The null hypothesis is the no causality between tourism and economic growth. *, ** and *** indicate rejection of the null hypothesis at the 10, 5 and 1 percent levels of significance, respectively. STANLIV=Standards of Living, GOVEFF=Government Effectiveness, POLREG=Political Regime, DEM=Democracy, TOUR-SPEC=Tourism Specialisation, TTCI=Tourism Competitiveness.