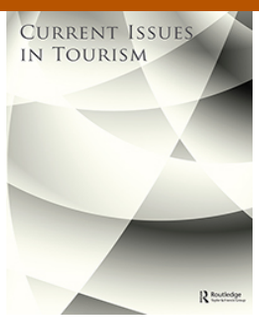

Current Issues in Tourism

ISSN: 1368-3500 (Print) 1747-7603 (Online) Journal homepage: http://www.tandfonline.com/loi/rcit20

Has the tourism-led growth hypothesis been validated? A literature review

Juan Gabriel Brida, Isabel Cortes-Jimenez & Manuela Pulina

To cite this article: Juan Gabriel Brida, Isabel Cortes-Jimenez & Manuela Pulina (2016) Has the tourism-led growth hypothesis been validated? A literature review, Current Issues in Tourism, 19:5, 394-430, DOI: 10.1080/13683500.2013.868414

To link to this article: http://dx.doi.org/10.1080/13683500.2013.868414

Current Issues in Tourism, 2016
Vol. 19, No. 5, 394–430, http://dx.doi.org/10.1080/13683500.2013.868414

REVIEW ARTICLE

Has the tourism-led growth hypothesis been validated? A literature review

Juan Gabriel Brida[a], Isabel Cortes-Jimenez[b] and Manuela Pulina[c*]

[a]*School of Economics and Management, Free University of Bolzano, Piazza Università 1, 39100 Bolzano, Italy;* [b]*Irstea, UR DTGR Développement des territoires montagnards, Grenoble, France;* [c]*Department of Economics and CRENoS, Università di Sassari, Sassari, Italy*

(*Received 1 July 2013; final version received 18 November 2013*)

Over 10 years have passed since the first paper on the tourism-led growth hypothesis (TLGH) was published in 2002. Since then, a wave of studies has appeared trying to understand the temporal relationship between tourism and economic growth. Hence, it is possible to provide an assessment in terms of econometric methods used and main empirical findings achieved so far. This paper presents an exhaustive review of approximately 100 peer-reviewed published papers on the TLGH. An overview on the economic theoretical framework behind the TLGH is also provided. Notably, the results present an increasing diversification in the econometric modelling used. With a few exceptions, the empirical findings suggest that overall international tourism drives economic growth.

Keywords: tourism-led growth hypothesis; economic growth; Granger causality; comprehensive review

Introduction

Before 2002, there was already interest in the relationship between the tourism activity and the growth on national income and/or national production although the theoretical ground of such relationship was not explicitly defined. The study by Balaguer and Cantavella-Jordà (2002), published in Applied Economics, was the first one to formally refer to the tourism-led growth hypothesis (TLGH), hence offering a theoretical and empirical link between inbound tourism and economic growth. The country under analysis was Spain, an internationally recognised case study of success of tourism development and benefits for the economy through the industrialisation (Cortés-Jiménez & Anton Clavé, in press; Nowak, Sahli, & Cortés-Jiménez, 2007). Theoretically, the TLGH was directly derived from the export-led growth hypothesis (ELGH) that postulates that economic growth can be generated not only by increasing the amount of labour and capital within the economy, but also by expanding exports.

The 'new growth theory', developed by Balassa (1978), suggests that exports have a relevant contribution to economic growth through two main channels: by improving efficiency in the allocation of the factors of production and expanding their volume. The increase in efficiency is obtained by several sources: expanding external and internal competition, developing positive externalities for other sectors by promoting the diffusion of

*Corresponding author. Email: mpulina@uniss.it

technical knowledge and skills and facilitating the exploitation of economies of scale and scope in the export sector (Grossman & Helpman, 1991; Krueger, 1980). Exports also enhance economic growth by increasing the level of investment. This linkage is due to several causes such as: the relief of the foreign exchange constraint that leads to the expansion of imports of capital and intermediate goods (McKinnon, 1964); and voluntary domestic savings as well as investment opportunities due to government savings, banking system and external capital (Ghirmay, Grabowski, & Sharma, 2001).

International tourism is regarded as a non-standard type of export, since it implies a source of receipts and consumption *in situ*. Given the difficulties in measuring tourism activity, the economic literature tends to focus on primary and manufactured product exports, hence neglecting this economic sector. Analogous to the ELGH, the TLGH analyses the possible temporal relationship between tourism and economic growth, both in the short and long run. The question is whether tourism activity leads to economic growth or, alternatively, economic expansion drives tourism growth, or indeed a bi-directional relationship exists between the two variables. Empirically, this hypothesis has commonly been tested via the so-called Granger no-causality test (Granger, 1988).

The proliferation of empirical studies, testing whether economic growth is tourism driven, is such that the TLGH is nowadays considered as a key area of research within tourism economics, as Song, Dwyer, Li, and Cao (2012) remark. Over 10 years of publishing in this area allows for an in-depth assessment on the lessons learned from the TLGH, with respect to the methodological choices and the main results, keeping an eye to geographical differences. Hence, this is the main objective of the present study based on the investigation of approximately 100 peer-reviewed published papers, within the time span from 2002 up to the last available information in 2013.

The review process is based on the following strategy. The search has been done in international economics journals and tourism journals with peer revision; well-known search engines have been used (e.g. ISI, WebScience, Scopus, Google Scholar), yet, unpublished manuscripts and working papers have not been included. Given the goal of our study, only papers testing the TLGH are here considered. It is important to remind that there exists a complementary body of the literature on the relationship between tourism and growth looking at convergence growth (e.g. Cortés-Jiménez, 2008; Santana-Gallego, Ledesma-Rodriguez, Perez-Rodriguez, & Cortés-Jimenez, 2010) or growth and tourism specialisation issues (Brau, Lanza, & Pigliaru, 2007).

It is noteworthy to highlight that there are other empirical studies that estimate tourism–growth correlations and/or interpret a large tourism–income elasticity as tourism causing economic growth, ignoring the Granger causality testing. Whilst in the former the Granger test is omitted because these studies are not framed within the TLGH, in the latter it is not considered due to the lack of accuracy in testing for causality. Therefore, following the above-mentioned search criteria, overall 95 papers are here examined.

Hence, the present paper contributes to the literature of the TLGH in the following ways. Firstly, a deep insight into the 'Granger causality' definition is provided, which is disentangled from the 'pure' causality relationship, which is essential to understand the interpretation of the empirical TLGH exercises. Secondly, an overall account of the theoretical framework behind the TLGH is given, which is not often offered in the empirical published studies, and it aims at serving as guidance for those not familiar with the topic. Thirdly, this paper reviews the econometric approaches utilised in testing the causal link between inbound tourism and growth paying special attention to the variables employed, the most used methods and the sophistication of some recently applied tests. Finally, as a final goal is to understand whether the hypothesis of economic growth led by expansion

of inbound tourism holds, the revised papers, divided by world regions, are analysed to understand potential geographical patterns. Overall, the present paper can be regarded as a complement to other existing literature reviews on the relationship between tourism and growth (see Castro-Nuño, Molina-Toucedo, & Pablo-Romero, 2013; Pablo-Romero & Molina, 2013), by exclusively focusing on the TLGH and reviewing the theoretical, empirical and methodological facets of the published studies, which in turn, allows on to assess whether the TLGH is valid.

Prior to the discussion of the review investigation, the economic theoretical framework of the TLGH is presented. Firstly, an account of the different channels of influence of the international tourism to national economies is reviewed, and secondly, the theoretical economic model that frames the TLGH is explained. In this respect, the present review aims at reducing the gap between the econometric methods and the theoretical framework, often existing in the TLGH literature.

The economic theoretical background of the TLGH

Channels of influence of tourism in the economy

International tourism is widely believed to have a positive effect on the long-run economic growth through various channels. First, tourism is a significant foreign exchange earner contributing to capital goods that can be used in the production process (McKinnon, 1964). The objective of many countries is to increase foreign exchange earnings used to pay for imports and maintain the level of international reserves, especially by developing countries. In the case of Spain, this fact went further in financing the industrialisation process and thus achieving growth (Nowak et al., 2007). As a matter of fact, the contribution of tourism to the balance of payment, calculated as a percentage of total exports, is particularly high, for small islands. Overall, there is evidence that small islands, highly specialised in tourism activity, rank as top 10 nations according to the contribution of tourism activity to gross domestic product (GDP) (Schubert, Brida, & Risso, 2010). Brau et al. (2007) find that small economies are fast growing only when they are highly specialised in tourism activity. Examples of this kind are the Bahamas, the Virgin Islands, the Cayman Islands and St Lucia for which the share of tourism of GDP is more than 60% (Vanegas & Croes, 2003). However, in a more recent study by Figini and Vici (2010), employing a sample of more than 150 countries, they find that tourism-based countries have not grown at a higher rate than non-tourism-based countries. The most visited destinations (i.e. France, the USA, China and Italy) reached values below 10%, with the only exception being Spain (18.4%; notably, Spain ranks fourth as world top tourism destination in terms of arrivals and second in terms of tourism receipts UNWTO, 2010).

Second, tourism plays an important role in stimulating investments in new infrastructure, labour and competition. The tourism sector is based on four main production factors: labour, physical capital, technology and environmental resources. Labour is one of the main pillars of tourism and hence this economic activity can be regarded as an opportunity to create new jobs. As WTTC (2012) reports, in 2011 alone, the Travel & Tourism (T&T) sector's total contribution to employment was 8.7%, responsible for 254.941 million direct and indirect jobs. According to the same source, the total contribution of the T&T to GDP was 9.1%. Hence, for many developed and developing countries tourism has become an important part of the economy. Labour, as a factor of production, comprises also skills, education and professional training, all elements that can enhance efficiency and competition (Blake, Sinclair, & Campos Soria, 2006). Although it is often argued that tourism

is a low-tech sector and the generated employment is often regarded as low-skilled, Di Liberto (2013) finds that an increase in human capital endowments is always beneficial, even when the development strategy focuses on the expansion the tourism sector. Physical capital includes a wide range of private and public infrastructure such as airports, harbours, roads, hotels and restaurants, and is another main productivity and commerce driver (Sakai, 2009). Although the expansion of new infrastructure is a crucial requirement to achieve a competitive tourism system, many tourism destinations face a challenge to find the right equilibrium between supply expansion and a sustainable path of growth (Capó, Riera Font, & Rosselló Nadal, 2007; Vanegas & Croes, 2003). Technology is a further important factor for productivity and efficiency growth. This is even more true in a global economy where information and communication technology (ICT) gives rise to many challenges and yet many opportunities for tourism destinations. For example, Kumar and Kumar (2012) find that ICT investment and tourism market development are crucial for economic growth in Fiji. Given such a dynamic economic environment, tourism businesses may also become more competitive through cooperation (Feng & Morrison, 2007; Lemmetyinen & Go, 2009).

Third, tourism may stimulate other economic industries by direct, indirect and induced effects. An increase in tourism expenditure may lead to additional activity in related industries, and the overall variation connected with it will be greater than the initial injection in spending. If this effect is activated, one of the best ways to enhance economic benefits is to integrate tourism into the national economy by establishing strong linkages between tourism and other economic sectors such as agriculture, fisheries, manufacturing, construction and other service industries (Cernat & Gourdon, 2012). If the tourism sector makes use of products and services produced within the local economy, it will strengthen these other sectors and provide additional income. In economics, this process is known as the multiplier effect of the tourism sector on the overall economy which is empirically calculated either through the Tourism Satellite Account (Spurr, 2009) or through computable general equilibrium models (which use input–ouput tables, see e.g. Blake et al., 2006; Dwyer, Forsyth, & Spurr, 2004). These methodologies also allow one to estimate these leakages. As Cernat and Gourdon (2012) explain, internal linkages not only relate to imports, but they may also refer to repatriation of salaries of foreign staff and interest paid on earning duties in the local tourism sector. For example, Jackman and Lorde (2010) argue that the inconclusive results of the TLGH in the case of Barbados can be explained by leakages due to imports.

Fourth, tourism contributes to generate employment and hence to increase income. As stated, tourism is a key source of employment that activates income for residents through multiplier effects. International tourism expenditure finances local businesses. A part of this income is allocated for repaying the production factors (i.e. wages, rents and interest payments) and a part becomes profit. This extra income then activates new consumption that produces further economic benefits and income amongst local economic agents. Nevertheless, the contribution of the hospitality sector to the local economy may not be homogenous. Andriotis (2002), for example, shows that if, on the one hand, large-scale firms may increase public sector revenue through a higher level of taxation, on the other hand, they tend to trade less with local suppliers. Hence, the author concludes that to enhance local multiplier effects, tourism activity needs to activate a higher participation of local investors and create more employment opportunities.

Fifth, tourism causes positive economies to scale and scope (Andriotis, 2002; Croes, 2006). The former helps businesses to reduce their average cost per unit of production as their size, or scale, increases. The latter helps businesses to decrease their average total cost as a result of increasing the number of different goods produced. As international

tourism demand increases, hotel firms tend to expand their size and to provide diversified facilities (Weng & Wang, 2004).

Finally, as economic causes, one can mention the rapid expansion of national GDP that encourage even further international tourism. The improvement in the process of globalisation tends to enhance trade amongst countries, hence facilitating exports (Wahab & Cooper, 2001). In a global economy, there is an increasing international ownership and franchising of many hotel and restaurant chains that have become big players across the word. However, these international organisations have often little or no commitments to the host destination, hence undermining potential multiplier effects within the local economy (Andriotis, 2002).

The theoretical model

A rigorous study of the relationship between tourism and economic growth, through a TLGH perspective, needs to be underpinned by solid economic theory foundations. From a theoretical point of view, two main approaches may be identified. First, a demand side model can be based on the standard Keynesian function, where tourism is treated as an exogenous variable; however, as Figini and Vici (2010) point out such a setting is static and only relates to the short-run equilibrium. Hence, the demand model can be further expanded by including tourism receipts, real tourism price and real GDP as endogenous variables and analysing shocks on tourism demand function (Brida & Risso, 2010; Narayan, 2004; Tang, 2013).

Second, the TLGH specification is commonly based on a production function underpinned on the neoclassical growth theory by Solow, and expanded by Balassa (1978). This model includes the standard production inputs, that is, labour and physical capital, as well as tourism as a non-standard type of export. This theoretical setting is expanded by Lanza and Pigliaru (2000) who develop a two-sector model *à la* Lucas, including natural resources as a further input in the production process. Their results show that those destinations specialised in tourism may exploit these resources to correct for the technological gap. Particularly, if small countries are endowed with natural resources, they are more likely to be specialised in tourism and achieve higher growth rates.

Within this theoretical two-sector setting, Brau et al. (2007) identify two alternative scenarios: the 'optimistic interpretation' and the 'pessimistic interpretation'. The former interpretation is based on the hypothesis of a low elasticity of substitution between tourism and manufacturing commodities; in other words, given consumers' preferences, tourism specialisation is supposed to be highly valued and the representative consumer does not easily substitute tourism services with cheaper manufacturing goods. Hence, an elasticity less than one leads to strong 'terms of trade effect' favourable to the tourism sector that grows faster than the manufacturing sector. As the authors emphasise, this interpretation underlies the TLGH, in that growth is driven by a continuous appreciation of tourism services and such a growth can be viewed as sustainable.

The negative interpretation is based on the assumption of a high substitution elasticity between tourism and manufacturing commodities; in other words, given consumers' preferences, tourism specialisation is supposed to be relatively less valued and the representative consumer tends to substitute tourism services with manufacturing goods. Hence, an elasticity greater than one leads to 'terms of trade effect' less favourable to the tourism sector. Nevertheless, as the authors point out, if the TLGH is assessed, the source of this growth is more likely to depend on the output expansion thanks to a rapid increase in the exploitation of natural resources, rather than the terms of trade. In this case, an

enhancement in growth though tourism expansion possibly compromises tourism destinations' development and their sustainability in the long run.

From a theoretical point of view, another thread of research relates to the so-called 'Dutch disease' first developed by Corden and Neary (1982). The basic theoretical model hypotheses a two-sector economy consisting of a natural gas sector (a non-traded goods sector), that is booming, and two manufacturing traded goods (traded sectors) that are lagging. In the model, a shift in labour occurs from the lagging sector to the booming sector, causing deindustrialisation. A 'resource curse' may be also trigged as a consequence of a resource reallocation (Pegg, 2010). The Dutch disease framework was extended to the tourism sector, as a highly intensive labour sector characterised by a certain market power because of the abundance of natural resources and heritage endowment of the destination (Copeland, 1991; Deng, Ma, & Cao, 2013a). In this case, on the one hand, an inflow of foreign capital is likely to increase land and housing prices, causing a crowding-out effect on local business. Besides, the tourism booming sector may attract labour forces from the lagging sectors leading to an overall loss of welfare. As Sheng (2011) concludes in his theoretical framework, the effects of government interventions (such as levying tax on the booming sector and subsidising the lagging sector) to internalise these negative effects on local economy still require a deeper empirical investigation.

The TLGH review investigation

A selection of 95 papers has been identified as key to undertake a review investigation on whether the TLGH is generally valid. These papers have been dissected and five tables following the UNWTO (2010) region classification are provided. Hence, the results for Africa and the Middle East, the Americans, Asia and Pacific, and Europe are presented and a fifth table is included for those studies testing the TLGH for a group of countries. These tables contain information regarding the authors and publication year (chronologically descending), journal of publication, time span of analysis, data frequency, country of study (i.e. tourism destination), econometric methodology, variables employed and results of the short-run and long-run causality (Tables 1–5).

The main characteristics of this review research are presented in five subsections: general features, the main econometric methodologies and outstanding particularities, how (inbound) tourism is effectively measured in the empirical analyses, the explanatory variables chosen and, finally, main results of the validity of the TLGH looking separately at results of short-run causality and long-run causality.

General features

The main hypotheses to be tested in this strand of the literature are the following: does tourism affect economic growth? Are tourism and economic growth temporally related? That is, does tourism activity lead to economic growth or does economic growth lead to tourism activity, or does a bi-directional temporal causality exist? To test the TLGH, the standard production function framework is commonly employed as theoretical background model (e.g. Balassa, 1978; Feder, 1983; Ghirmay et al., 2001; Park & Prime, 1997).

Similar to the ELGH, inbound tourism is included, as a *sui generi* type of export, together with GDP. To answer the previous questions, authors have used either a bivariate or a multivariate framework. In almost half of the studies, a three-variables structure is adopted including indicators on GDP, inbound tourism and exchange or price indicator,

Table 1. African and the Middle East destinations.

Authors (date)	Journal	Frequency (time span)	Destination	Methodology	Variables	Granger Causality	
						Short run	*Long run*
(1) Ahiawodzi (2013)	*British Journal of Economics, Finance and Management Sciences*	Annual (1985–2010)	Ghana	Vector error correction mechanism (VECM) (Johansen)-Granger causality	Tourism earnings and GDP		$Y \rightarrow T$
(2) Kibara, Odhiambo, and Njuguna (2012)	*International Business &Economics Research Journal*	Annual (1983–2010)	Kenya	Autoregressive distributed lags (ARDL) (Granger causality)	Tourism arrivals and real GDP	$T \rightarrow Y$	$T \rightarrow Y$
(3) Tang and Abosedra (2012)	*Current Issues in Tourism*	Annual (1995–2010)	Lebanon	ARDL (Granger causality)	Tourism arrivals and real GDP	$T \leftrightarrow Y$	$T \rightarrow Y$
(4) Hye and Khan (2013)	*Asia Pacific Journal of Tourism Research*	Annual (1971–2008)	Pakistan	ARDL and Windows rolling (Johansen cointegration)	Tourism earnings and GDP		$T \rightarrow Y$ *(except in 2006, 2007 and 2008)*
(5) Odhiambo (2011)	*Economic Computation & Economic Cybernetics Studies and Research*	Annual (1980–2008)	Tanzania	ARDL (Granger causality)	GDP, tourism receipts, exchange rate		$Y \rightarrow T$
(6) Cortés-Jiménez, Nowak, and Sahli (2011)	*Tourism Economics*	Annual (1975–2007)	Tunisia	VECM (Johansen)-Granger causality	Tourism exports, imports of capital goods and economic growth		$T \rightarrow M$ $Y \rightarrow T$
(7) Kreishan (2011)	*International Management Review*	Annual (1970–2009)	Jordan	VECM (Johansen)-Granger causality	Tourism revenues – GDP		$T \rightarrow Y$

(8) Belloumi (2010)	*International Journal of Tourism Research*	Annual (1970–2007)	Tunisia	VECM (Johansen)-Granger causality	Tourism receipts – GDP – real effective exchange rate		$T \rightarrow Y$
(9) Akinboade and Braimoh (2010)	*International Journal of Tourism Research*	Annual (1980–2005)	South Africa	VECM (Johansen)-Granger causality	Tourism receipts – GDP – real effective exchange rate – exports	$T \rightarrow Y$	$T \rightarrow Y$
(10) Durbarry (2004)	*Tourism Economics*	Annual (1952–1999)	Mauritius	VECM (Johansen)-Granger causality (vector autoregressive (VAR))	Tourism receipts – GDP – physical and human capital – exports (EX)	$EX \rightarrow Y$	$EX \leftrightarrow Y$

Table 2. The American destinations.

Authors (date)	Journal	Frequency (time span)	Destination	Methodology	Variables	Granger	
						Short run	*Long run*
(1) Ghartey (2013)	*Tourism Economics*	Annual (1963–2008)	Jamaica	VECM (Johansen)-Granger causality	Tourism arrivals – GDP – real exchange rate – structural changes – hurricanes	$T \leftrightarrow Y$	$T \leftrightarrow Y$
(2) Ridderstaat, Croes, and Nijkamp (2013)	*International Journal of Tourism Research*	Annual (1972–2011)	Aruba	VECM (Johansen)-Granger causality	Tourism receipts – GDP	$T \leftrightarrow Y$	$T \leftrightarrow Y$
(3) Amaghionyeodiwe (2012)	*Tourism Economics*	Annual (1970–2005)	Jamaica	VECM (Johansen)-Granger causality	Tourism receipts – GDP		$T \leftrightarrow Y$
(4) Jackman (2012)	*Regional and Sectoral Economic Studies*	Quarterly (1975:1–2010:2)	Barbados	VECM (Johansen)-Granger causality	Tourism arrivals – GDP – exchange rate		$T \rightarrow Y$
(5) Lorde, Francis, and Drakes (2011)	*The International Trade Journal*	Annual (1974–2004)	Barbados	VECM (Johansen)-Granger causality	Real GDP (and real GDP per capita), tourist arrivals and real exchange rate	$T \leftrightarrow Y$ *(using real GDP pc)* $Y \rightarrow T$ *(using real GDP)*	$T \leftrightarrow Y$

(6) Brida, Punzo, and Risso (2011)	*Tourism Economics*	Annual (1965–2007)	Brazil	VECM (Johansen)-Granger causality	International tourism earnings – real exchange rate – GDP		$T \rightarrow Y$
(7) Brida and Monterubbianesi (2010)	*Journal of Tourism Challenges and Trends*	Annual (1990–2005)	Colombia (Antioquia, Bolivar, Bogotà, Magdalena, San Andreas and Providencia of Colombia)	VECM (Johansen)-Granger causality	Tourism expenditure – GDP – exchange rate		$T \rightarrow Y$
(8) Jackman and Lorde (2010)	*Economics Bulletin*	Annual (1970–2007)	Barbados	VECM (dynamic ordinary least squares (DOLS) – Saikkonen)-Granger causality	Tourism arrivals – GDP – households expenditure – relative price	No Granger causality	No cointegration
(9) Schubert et al. (2010)	*Tourism Management*	Annual (1970–2008)	Antigua and Barbuda	VECM (Johansen)-Granger causality	Tourism expenditure – GDP USA – exchange rate		$T \rightarrow Y$
(10) Brida and Risso (2009)	*European Journal of Tourism Research*	Annual (1988–2008)	Chile	VECM (Johansen)-Granger causality (Toda–Yamamoto)	Tourism expenditure – GDP – exchange rate		$T \rightarrow Y$

(*Continued*)

Table 2. Continued.

Authors (date)	Journal	Frequency (time span)	Destination	Methodology	Variables	Granger	
						Short run	*Long run*
(11) Brida, Pereyra, Risso, Devesa, and Aguirre (2009)	*Tourismos*	Quarterly (1987–2007)	Colombia	VECM (Johansen)-Granger causality	Tourism expenditure GDP – exchange rate		$T \rightarrow Y$
(12) Tang and Jang (2009)	*Tourism Management*	Quarterly (1981–2005)	USA	Micro study – Granger causality (Johansen)	Sales revenues (air, casino, hotel, restaurant) – GDP	$Y \rightarrow$ air $Y \rightarrow$ casino $Y \rightarrow$ hotel $Y \rightarrow$ rest	
(13) Brida, Sanchez Carrera, and Risso (2008)	*Economics Bulletin*	Quarterly (1980–2007)	Mexico	VECM (Johansen)-Granger causality	Tourism expenditure by Argentineans – GDP – exchange rate		$T \rightarrow Y$
(14) Croes and Vanegas (2008)	*Journal of Travel Research*	Annual (1980–2004)	Nicaragua	Cointegration (Johansen) – Granger causality (VAR)	Tourism receipts – GDP – number people below the poverty line		$T \rightarrow Y$ $T \rightarrow P$

Table 3. Asian and Pacific destinations.

Authors (date)	Journal	Frequency (time span)	Destination	Methodology	Variables	Granger Causality	
						Short run	Long run
(1) Bandula Jayathilake (2013)	*International Journal of Business, Economics and Law*	Annual (1967–2011)	Sri Lanka	VECM (Johansen)-Granger causality	Tourism arrivals and real GDP	$T \rightarrow Y$	$T \rightarrow Y$
(2) Corrie, Stoeckl, and Chaiechi (2013)	*Tourism Economics*	Quarterly (2000:1–2010:2)	Australia	ARDL – Granger causality	Tourism receipts, GDP and other variables		$T \leftrightarrow Y$
(3) Georgantopoulos (2013)	*Asian Economic and Financial Review*	Annual (1988–2011)	India	VECM (Johansen)-Granger causality	Tourism expenditure, GDP, exchange rate and other variables	$T \rightarrow Y$	No Granger causality
(4) Li, Mahmood, Abdullah, and Chuan (2013)	*Margin: The Journal of Applied Economic Research*	Annual (1974–2010)	Malaysia	VECM (Johansen)-Granger causality	Tourism receipts, GDP and other variables	$T \rightarrow Y$	$T \rightarrow Y$
(5) Jalil et al. (2013)	*Economic Modelling*	Annual (1972–2011)	Pakistan	ARDL – Granger causality	GDP, international tourism receipts, capital Stock, inflation and trade openness	No Granger causality	$T \rightarrow Y$

(*Continued*)

Table 3. Continued.

Authors (date)	Journal	Frequency (time span)	Destination	Methodology	Variables	Granger Causality	
						Short run	Long run
(6) Lee and Kwag (2013)	*Journal of Distribution Science*	Quarterly (1970:1–2010:3)	South Korea	VECM (Johansen)-Granger causality	Tourism expenditure, GDP, industrial production and CO_2 emissions,	$T \leftrightarrow Y$	$T \rightarrow Y$
(7) Trang and Duc (2013)	*Middle East Journal Of Business*	Annual (1997–2011)	Thua Thien Hue Province, Vietnam	VECM (Johansen)-Granger causality	Tourism expenditure, GDP		$T \leftrightarrow Y$
(8) Trang, Duc, and Dung (2013)	*Tourism Economics*	Annual (1992–2011)	Vietnam	VECM (Johansen)-Granger causality	Tourism expenditure, GDP, exchange rate		$T \leftrightarrow Y$
(9) Wang and Xia (2013)	*Modern Economy*	Annual (2001–2011)	Jiangsu Gaochun District, China	VECM (Johansen)-Granger causality	Tourism expenditure, GDP		$T \leftarrow Y$
(10) Tang and Tan (2013)	*Tourism Management*	Monthly (1995:1–2009:2)	Malaysia – bilateral analysis with Australia, Brunei, China, Germany, Indonesia, Japan, Korea, Singapore, Taiwan, Thailand, UK and USA	Bayer and Hanck cointegration test – recursive Granger causality test	Industrial production index and tourism arrivals by 12 markets of origin	No Granger causality	Australia, Germany, Japan, Singapore, Taiwan, UK and USA: stable $T \rightarrow Y$

							Brunei, China, Indonesia and Korea: unstable $T \rightarrow Y$
(11) Tang (2013)	*International Journal of Tourism Research*	Annual (1974–2009)	Malaysia	ARDL – Granger causality	Tourism receipts, real GDP and real exchange rates	No evidence	$T \leftrightarrow Y$
(12) Srinivasan, Kumar, and Ganesh (2012)	*The Romanian Economic Journal*	Annual (1969–2009)	Sri Lanka	ARDL – Granger causality	Tourism expenditure, GDP	$T \rightarrow Y$	$T \rightarrow Y$
(13) Lee (2012)	*Anatolia*	Annual (1980–2007)	Singapore	ARDL – Granger causality	Exports (X), imports (M), GDP (Y), visitor arrivals (T)	$T \leftarrow Y$ $X \leftrightarrow Y$ $X \rightarrow T$ $X \rightarrow M$	$M \rightarrow Y$
(14) He and Zheng (2011)	*Journal of Agricultural Science*	Annual (1990–2009)	Sichuan District, China	VECM (Johansen)-Granger causality	Tourism expenditure, GDP, exchange rate		$Y \rightarrow T$
(15) Jin (2011)	*Cornell Hospitality Quarterly*	Annual (1974–2004)	Hong Kong	VECM (Johansen)-Granger causality	GDP, tourism receipts, exchange rate and other variables	$T \rightarrow Y$	No Granger causality
(16) Katircioglu (2011)	*Singapore Economic Review*	Annual (1960–2007)	Singapore	VECM (Johansen)-Granger causality	GDP, tourist arrivals, exchange rate		$T \rightarrow Y$

(*Continued*)

Table 3. Continued.

Authors (date)	Journal	Frequency (time span)	Destination	Methodology	Variables	Granger Causality	
						Short run	Long run
(17) Sarmidi and Salleh (2011)	*International Journal of Economics and Management*	Quarterly (1997:1–2007:4)	Malaysia – bilateral analysis with Singapore, Thailand, Indonesia and Brunei Darussalam	ARDL – Granger causality	Real trade, real exports, real imports, real GDP, visitor arrivals	Malaysia–Thailand $T \rightarrow Y$	Malaysia–Singapore $T \leftarrow Y$;
						Malaysia–Indonesia $T \rightarrow Y$	Malaysia–Thailand $T \leftrightarrow Y$
						Malaysia–Brunei $T \rightarrow Y$	Malaysia–Indonesia $T \leftarrow Y$;
							Malaysia–Brunei $T \leftrightarrow Y$
(18) Tang (2011)	*International Journal of Tourism Research*	Monthly (January 1995 to February 2009)	Malaysia	VECM (Johansen)-Granger causality	Industrial Production Index and Visitor arrivals by 12 markets of origin	Australia, Germany Japan, Singapore, Taiwan and Thailand $T \rightarrow Y$	Singapore, Taiwan, Thailand, the UK and the USA $T \rightarrow Y$
						No Granger causality for Brunei, China and Korea	No Granger causality for Brunei, China and Korea

(19) Malik, Chaudhry, Sheikh, and Farooqi (2010)	*European Journal of Economics, Finance and Administrative Sciences*	Annual (1972–2007)	Pakistan	VECM (Johansen)-Granger causality	GDP, tourism receipts, exchange rate and current account deficit		$T \rightarrow Y$
(20) Katircioglu (2010a)	*Tourism Economics*	Annual (1960–2007)	Singapore	VECM (Johansen)-Granger causality	GDP, tourism receipts, exchange rate	$T \rightarrow Y$	$T \rightarrow Y$
(21) Mishra, Rout, and Mohapatra (2010)	*European Journal of Social Sciences*	Annual (1978–2009)	India	VECM (Johansen)-Granger causality	GDP, tourism receipts, exchange rate		$T \rightarrow Y$
(22) Kadir and Jusoff (2010)	*International Journal of Economics and Finance*	Quarterly (1995–2006)	Malaysia	Johansen – Granger causality	Tourists receipts, exports (EX), imports (IM), trade (TR)		EX $\rightarrow T$ IM $\rightarrow T$ TR $\rightarrow T$
(23) Nayaran, Nayaran, Prasad, and Prasad (2010)	*Tourism Economics*	Annual (1988–2004)	Fiji, Tonga, Solomon Islands, Papua New Guinea	Cointegration (Pedroni) – Panel Granger causality	Tourists exports, GDP	$T \leftarrow Y$	$T \rightarrow Y$
(24) Lean and Tang (2009)	*International Journal of Tourism Research*	Monthly (1989–2009)	Malaysia	Granger causality (Toda–Yamamoto – Dolado–Lütkepohl)	Tourists arrivals, industrial production		$T \leftrightarrow Y$
(25) Chen and Chiou-Wei (2009)	*Tourism Management*	Quarterly (1975–2007)	Taiwan and Korea	E-generalised-autoregressive conditional heteroskedasticity (GARCH)-M with uncertainty	Tourism earnings, GDP, exchange rate	Taiwan: $T \rightarrow Y$ South Korea: $T \leftrightarrow Y$	
(26) Lee and Chien (2008)	*Mathematics and Computers in Simulation*	Yearly (1959–2003)	Taiwan	Johansen – Granger causality (Structural break – Gregory–Hansen)	Tourist receipts, tourism arrivals, GDP, exchange rate		$T \leftrightarrow Y$

(*Continued*)

Table 3. Continued.

Authors (date)	Journal	Frequency (time span)	Destination	Methodology	Variables	Granger Causality	
						Short run	Long run
(27) Tang, Selvanathan, and Selvanathan (2007)	*Tourism Economics*	Quarterly (1985–2001)	China	HEGY – Granger causality (Zapata and Rambardi)	Tourist arrivals, inward foreign direct investments (FDI)		FDI→ T
(28) Khalil, Mehmood, and Waliullah (2007)	*The Pakistan Development Review*	Annual (1960–2005)	Pakistan	VECM (Johansen)-Granger causality	GDP, tourism receipts		$T \leftrightarrow Y$
(29) Kim, Chen, and Jang (2006)	*Tourism Management*	Quarterly (1971–2003) Annual (1956–2002)	Taiwan	Johansen – Granger causality (VAR)	Tourist arrivals, GDP		Quarterly: $T \leftrightarrow Y$ Annual: $T \leftrightarrow Y$
(30) Khan, Toh, and Chua (2005)	*Journal of Travel Research*	Quarterly (1978–2000)	Singapore	Engle and Granger – Granger causality	Tourist arrivals (T), exports (EX), imports (IM)		$T \leftrightarrow$ IM
(31) Oh (2005)	*Tourism Management*	Quarterly (1975–2001)	Korea	Engle and Granger – Granger causality	Tourism receipts, GDP	$T \rightarrow Y$	
(32) Narayan (2004)	*Tourism Economics*	Annual (1970–2000)	Fiji	ARDL – VECM	Tourist arrivals, disposable income, relative hotel substitute prices, transport cost		$Y \rightarrow T$

Note: HEGY, Hylleberg-Engle-Granger-Yoo.

Table 4. European destinations.

Authors (date)	Journal	Frequency (time span)	Destinations	Methodology	Variables	Granger Causality	
						Short run	*Long run*
(1) Surugiu and Surugiu (2013)	*Tourism Economics*	Annual (1988–2009)	Romania	VECM (Johansen)-Granger causality	GDP, internal travel and tourism consumption, domestic travel and tourism spending and real exchange rate	$T \rightarrow Y$	$T \rightarrow Y$
(2) Massidda and Mattana (2013)	*Journal of Travel Research*	Annual (1987–2009)	Italy	SVECM (Johansen)-Granger causality	GDP, tourist arrivals, total trade		$T \leftrightarrow Y$
(3) Isik (2012)	*Tourismos*	Annual (1990–2008)	Turkey (market source: USA)	VECM (Johansen)-Granger causality	Tourist arrivals from USA, GDP	$T \rightarrow Y$	$T \rightarrow Y$
(4) Husein and Kara (2011)	*Tourism Economics*	Annual (1964–2006)	Turkey	VECM (Johansen)-Granger causality	GDP, tourism receipts, exchange rate		$T \rightarrow Y$
(5) Kasimati (2011)	*International Research Journal of Finance and Economics*	Annual (1960–2010)	Greece	VECM (Johansen)-Granger causality	Tourist arrivals, GDP, real effective exchange rate		*No Granger causality*
(6) Husein and Kara (2011)	*Tourism Economics*	Annual (1963–2006)	Turkey	VECM (Johansen)-Granger causality	Real GDP, tourism receipts and real exchange rate (RER)		$T \rightarrow Y$

(*Continued*)

Table 4. Continued.

Authors (date)	Journal	Frequency (time span)	Destinations	Methodology	Variables	Granger Causality	
						Short run	*Long run*
(7) Arslanturk, Balcilar, and Ozdemir (2011)	*Economic Modelling*	Annual (1963–2006)	Turkey	Rolling window and time-varying VECM – Granger causality	Tourism receipts – GDP	*No Granger causality*	*No Granger causality rolling VECM estimates showed that tourism receipts have predictive content for GDP after 1979*
(8) Payne and Mervar (2010)	*Tourism Economics*	Quarterly (2000:1–2008:3)	Croatia	VECM (Johansen)-Granger causality (Toda–Yamamoto)	GDP, tourism receipts, exchange rate		$Y \rightarrow T$
(9) Katircioglu (2010b)	*The World Economy*	Annual (1977–2007)	North Cyprus	VECM (Johansen)-Granger causality	GDP, tourism arrivals, exchange rate, and human capital	$T \rightarrow Y$	$T \rightarrow Y$
(10) Brida, Barquet, and Risso (2010)	*Tourismos*	Annual (1980–2006)	Trentino-Alto Adige (Italy)	VECM (Johansen)-Granger causality (Toda–Yamamoto)	German tourism expenses, GDP, relative prices		$T \rightarrow Y$
(11) Cortés-Jiménez and Pulina (2010)	*Current Issues in Tourism*	Annual (1954–2000)	Italy and Spain	VECM (Johansen)-Granger causality	Tourism earnings, GDP, physical and human capital	Spain: $T \rightarrow Y$	Italy: $T \rightarrow Y$ Spain: $T \leftrightarrow Y$
(12) Brida and Risso (2010)	*Journal of Policy Research in Tourism, Leisure and Events*	Annual (1980–2006)	South Tyrol (Italy)	VECM (Johansen)-Granger causality	German tourism arrivals, GDP, relative prices		$T \rightarrow Y$
(13) Zortuk (2009)	*International Research Journal of Finance and Economics*	Quartely (1990–2008)	Turkey	VECM (Johansen)-Granger causality	Tourists arrivals, GDP, exchange rate		$T \rightarrow Y$

(14) Katircioglu (2009a)	*Applied Economics*	Annual (1960–2005)	Cyprus	ARDL – Granger causality (VECM)	Tourists arrivals, GDP, trade volume (TR)		$T \leftarrow Y$ $T \leftarrow$ TR
(15) Katircioglu (2009b)	*Acta Oeconomica*	Annual (1960–2006)	Malta	ARDL – Granger causality (VECM)	Tourists arrivals, GDP, exchange rate		$T \leftrightarrow Y$
(16) Katircioglu (2009c)	*Tourism Management*	Annual (1960–2006)	Turkey	ARDL – Johansen cointegration	Tourists arrivals, GDP, exchange rate		*No cointegration* *No TLGH support*
(17) Kaplan and Çelik (2008)	*International Journal of Applied Economics and Finance*	Annual (1963–2006)	Turkey	VECM (Johansen)-Granger causality	Tourists receipts, GDP, exchange rate		$T \rightarrow Y$
(18) Nowak et al. (2007)	*Tourism Economics*	Annual (1960–2003)	Spain	VECM (Johansen)-Granger causality	Tourism receipts, GDP, imports of industrial goods and machinery (IMP)	$T \rightarrow Y$	$T \leftrightarrow Y$ $T \leftrightarrow$ IMP
(19) Louca (2006)	*Tourism Economics*	Annual (1960–2001)	Cyprus	VECM (Johansen)-Granger causality (pair-wise)	Tourists arrivals (TAR), tourism industry income (TY), expenditure: transport and communications (TC), hotel and restaurants (HR), advertising and promotion (AP)	TC $\rightarrow$ TY (TAR) HR $\rightarrow$ TY (TAR)	
(20) Gunduz and Hatemi-J (2005)	*Applied Economics Letters*	Annual (1963–2002)	Turkey	Autoregressive conditional heteroskedasticity (ARCH) – leveraged bootstrap Granger causality	Tourism arrivals, GDP, exchange rate		$T \rightarrow Y$
(21) Demiroz and Ongan (2005)	*Journal of Economics*	Quarterly (1980–2004)	Turkey	VECM (Johansen)-Granger causality	Tourism receipts, GDP	$T \leftrightarrow Y$	$T \leftrightarrow Y$
(22) Dritsakis (2004)	*Tourism Economics*	Quarterly (1960–2000)	Greece	VECM (Johansen)-Granger causality	Tourism earnings – GDP – exchange rate	$T \leftrightarrow Y$	$T \rightarrow Y$

(*Continued*)

Table 5. Groups of destinations.

Authors (date)	Journal	Frequency (time span)	Destinations	Methodology	Variables	Granger	
						Short run	*Long run*
(1) Aslan (2013)	*Current Issues in Tourism*	Annual (1995–2010)	12 Mediterranean countries	Panel Cointegration and Granger causality	Tourism receipts, GDP, exchange rate		Portugal, Israel, Turkey: $T \leftrightarrow Y$ Spain, Italy, Tunisia, Cyprus, Croatia, Bulgaria and Greece: $Y \rightarrow T$ no relationship for Malta and Egypt
(2) Brida and Giuliani (2013)	*Tourism Economics*	Annual (1980–2009)	Tirol–Südtirol–Trentino	VECM (Johansen)-Granger causality	Tourist arrivals, real effective exchange rate and GDP		Südtirol and Trentino: $T \rightarrow Y$ no relationship for Tirol
(3) Chou (2013)	*Economic Modelling*	Annual (1988–2011)	10 Transition countries	Panel cointegration and Granger causality	Tourism receipts, GDP		Bulgaria, Romania and Slovenia: $T \leftrightarrow Y$ Cyprus, Latvia and Slovakia: $T \rightarrow Y$ Czech Republic and Poland: $Y \rightarrow T$ No relationship for Estonia and Hungary
(4) Deng, Ma, and Shao (2013b)	*Tourism Economics*	Annual (1987–2010)	China districts	Panel cointegration	Tourism receipts, GDP and other variables		$T \rightarrow Y$

				Bootstrapping threshold regression			
(5) Deng et al. (2013a)	*Tourism Economics*	Annual (1987–2010)	China districts	Panel cointegration	Tourism receipts, GDP and other variables		$T \rightarrow Y$
(6) Kareem (2013)	*American Journal of Tourism Research*	Annual (1990–2011)	Africa	Panel cointegration and Granger causality	Tourism receipts, GDP, exchange rate		$T \leftrightarrow Y$
(7) Lee and Brahmasrene (2013)	*Tourism Management*	Annual (1988–2009)	European Union	Panel cointegration and Granger causality	Tourism receipts, CO_2 emissions, GDP, foreign direct investment		$T \rightarrow Y$
(8) Apergis and Payne (2012)	*Tourism Economics*	Annual (1995–2007)	Nine Caribbean countries	Panel cointegration and Granger causality	GDP, tourist arrivals and exchange rate	$T \leftrightarrow Y$	
(9) Caglayan, Sak, and Karymshakov (2012)	*Asian economic and Financial review*	Annual (1995–2008)	135 Different countries	Panel Granger causality	GDP, tourism receipts		Europe: $T \leftrightarrow Y$ America, Latin America and Caribbean: $T \rightarrow Y$ East and South Asia, Oceania: $T \leftarrow Y$ No relationship for the other groups of countries

(*Continued*)

Table 5. Continued.

Authors (date)	Journal	Frequency (time span)	Destinations	Methodology	Variables	Granger	
						Short run	*Long run*
(10) Ekanayake and Long (2012)	*The International Journal of Business and Finance Research*	Annual (1995–2009)	140 Developing countries	Panel Cointegration and Granger causality	GDP, real gross fixed capital formation, labour force, tourism receipts		No TLGH support
(11) Othman, Salleh, and Sarmidi (2012)	*Journal of Applied Sciences*	Annual (various)	18 Major tourism destinations worldwide	ARDL	Tourist arrivals, foreign direct investment and GDP		UK, Malaysia, Singapore, Austria, Canada, the Netherlands, Turkey: $T \leftrightarrow Y$ France, Germany, Italy: $T \rightarrow Y$ China $T \leftarrow Y$ No relationship: Greece, Hong Kong, Mexico, Portugal, Spain, Thailand and USA
(12) Dritsakis (2012)	*Tourism Economics*	Annual (1980–2007)	Seven Mediterranean countries: Spain, France, Italy, Greece, Turkey, Cyprus and Tunisia	Panel cointegration and fully modified ordinary least squares	Tourist arrivals per capita, real effective exchange rate, and real GDP per capita		$T \rightarrow Y$
(13) Nissan, Galindo, and Mendez (2011)	*The Service Industries Journal*	Quarterly (2000–2005)	11 Developed countries	Cointegration and Granger causality	GDP, tourism expenditure and other variables		$T \leftrightarrow Y$

(14) Fayissa, Nsiah, and Tadasse (2008)	*Tourism Economics*	Annual (1995–2004)	42 African countries	Panel Cointegration and Granger causality	GDP, tourism receipts and other variables		$T \rightarrow Y$
(15) Po and Huang (2008)	*Physica A*	Annual averages (1995–2005)	88 Countries	Cross section	Tourism receipts – inflation – capital stock, GDP – exchange rate	European: $T \rightarrow Y$ Latin American: $T \rightarrow Y$	
(16) Lee and Chang (2008)	*Tourism Management*	Annual averages (1990–2002)	OECD (14 European; 60.9% sample), Asia (5), Latin American (11), Sub-Sahara Africa (16)	Cointegration (Pedroni) – Heterogeneous panel – Panel Granger causality	Tourism receipts – tourism arrivals – GDP – exchange rate	OECD: $T \rightarrow Y$ Latin American: $T \leftrightarrow Y$ Africa: $Y \rightarrow T$	OECD: $T \rightarrow Y$ Latin American: $T \leftrightarrow Y$ Asia: $T \rightarrow Y$ Africa: $T \rightarrow Y$

where the real exchange rate is often included as a proxy to take into account the degree of openness of a given destination country, following the theoretical framework proposed by Balaguer and Cantavella-Jordà (2002).

Other authors present a multivariate analysis where various economic indicators are also employed, such as: household expenditure, prices and minimum deposit rate (Jackman & Lorde, 2010); number of people below the poverty line (in the case of Nicaragua, Croes & Vanegas, 2008); imports of industrial goods and machinery (Nowak et al., 2007); inward foreign direct investments (Tang et al., 2007); transport and communication, hotel and restaurants, advertising and promotion expenditure (Louca, 2006); exports and imports (Khan, Toh, & Chua, 2005); human capital and physical capital (Cortés-Jiménez & Pulina, 2010) and ICT (Kumar & Kumar, 2012). Econometrically, as shown by Lütkepohl (1982), the inclusion of additional variables into the system allows one or more accurate estimation and testing. Because of the increasing awareness on the risk of omission of relevant variables, only a relatively small number of researchers still undertake simple bivariate analyses, hence, the temporal relationship between GDP and international tourism is rather isolated.

Differences across the studies have been found with respect to the indicator chosen for the variable 'international tourism'. It is widely accepted that the most adequate proxy of demand of inbound tourism in a country is tourism expenditure normally expressed in terms of tourism receipts. Approximately 60 out of 95 use tourism receipts, tourism expenditure or tourism earnings as proxy for the international tourism variable. Other indicators are tourism arrivals, tourism revenues and tourism exports (Tables 1–5).

Regarding the frequency of the period analysis, annual frequency is prevalent. The majority of the rest of the studies use quarterly data (Kim et al. (2006) undertake the analysis both at annual and quarterly data), whereas only two studies employ monthly data for the case of Malaysia (Lean & Tang, 2009; Tang, 2011).

By world regions, only 10 studies belong to Africa and the Middle East; 14 studies are dedicated to American destinations; the other 32 studies examine countries in the Asia and Pacific whilst23 studies are dedicated to European countries. Looking closer, one observes that some countries are repeatedly studied for different time spans or by using different variables. Outstanding is the case of Turkey which is individually analysed in nine cases whilst other countries such as Greece, Italy, Cyprus and Spain appear in at least two different studies. Similar outcome can be highlighted for the Asian and Pacific destinations; for example, Taiwan and Malaysia are widely examined within different econometric settings and level of aggregation. Hence, attention should be paid not to generalise the results by world region. For example, the European destinations analysed so far (Table 4) are mainly Mediterranean countries characterised by a specific type of tourism (i.e. 'sea and sun' tourism).

Main empirical settings

Empirically, three main types of testing of the TLGH are identified: cross-section analysis, panel data analysis and time series analysis. The cross-section approach provides an investigation of the correlation between tourism and economic growth, explicitly considering growth performance (Figini & Vici, 2010). The main downside of this approach is the lack of the temporal dimension that is gained by the use of panel data. This quantitative methodology allows one to jointly investigate the pattern of a set of countries with homogenous characteristics. Nevertheless, it has also some limitations given the data availability constraint that does not always permit testing of more general specifications.

Amongst time series models, the most commonly used econometric specification to test the TLGH is the time series approach, which analytically is proposed as follows. Expressing function (1) in a linear logarithmic specification, the multivariate relationship amongst the variables, treated as endogenous, is given by the following expression:

$$\begin{bmatrix} \mathrm{LY}_t \\ \mathrm{LK}_t \\ \mathrm{LL}_t \\ \mathrm{LT}_t \end{bmatrix} = \begin{bmatrix} A_{10} \\ \cdots \\ \\ A_{40} \end{bmatrix} + \begin{bmatrix} A^1_{11} & & \cdots & A^1_{14} \\ & & \cdots & \\ \cdots & \cdots & \cdots & \cdots \\ A^1_{41} & & \cdots & A^1_{44} \end{bmatrix} \begin{bmatrix} \mathrm{LY}_{t-1} \\ \\ \cdots \\ \mathrm{LDR}_{t-1} \end{bmatrix} + \ldots + \begin{bmatrix} A^k_{11} & & \cdots & A^k_{14} \\ \\ \cdots & \cdots & \cdots & \cdots \\ A^k_{41} & & \cdots & A^k_{44} \end{bmatrix} \begin{bmatrix} \mathrm{LY}_{t-k} \\ \\ \cdots \\ \mathrm{LT}_{t-k} \end{bmatrix} + \begin{bmatrix} \varepsilon_{1t} \\ \\ \cdots \\ \varepsilon_{4t} \end{bmatrix}, \tag{1}$$

where $[A^1], \ldots$ and $[A^k]$ are the $p \times p$ (or 4×4) matrices of parameters to be estimated, k is the number of lags considered in the VAR model and ε_t is the 1×4 vector of the disturbance terms that are assumed to be uncorrelated with their own lagged values and uncorrelated with all of the right hand side variables.

Given the statistical properties of the economic variables under investigation, it is possible to implement the VAR specification into a VECM that allows for taking explicitly into account the short- and the long-run dynamics (Engle & Granger, 1987):

$$\mathrm{DY}_t = \Pi Y_{t-1} + \sum_{i=1}^{p-1} \Gamma_i Y_{t-i} + \mathbf{K}\mathrm{DV}_t + \varepsilon_t, \tag{2}$$

where $Y_t = (\mathrm{LY}_t, \ldots, \mathrm{LT}_t)$ is a vector of all the endogenous variables defined above, expressed in their first difference (D), as the variables are $I(1)$; Π is the long-run component of the model, that contains the cointegrating relations β and the loading coefficients α; Γ is the matrix of the short-run parameters; DV includes deterministic variables such as a constant, linear trend and further dummy variables; and ε_t is the Gaussian vector of the disturbance terms. A VECM model is considered as an a-theoretic simultaneous system that includes all the analysed variables endogenously.

The traditional procedure to test for exogeneity is the Granger causality test. In the econometric literature, Granger no-causality refers to 'strong exogeneity' (Engle, Hendry, & Richard, 1983). Given a simplified bivariate system, composed by y_t and x_t, no feedback exists between these two economic variables. This hypothesis implies that the information set on y_t does not contain information about x_t. However, if the null hypothesis fails to be accepted, then it may be possible that, for example, y_t drives x_t, alternatively that x_t leads to y_t when the latter is treated as the dependent variable. Additionally, it is also likely that a bi-directional Granger causality exists between the two variables. In this case, each variable contains information about the other (see also Ahmad, 2001). It is important to emphasise that in the literature there still appears confusion between the definition of causality in the Granger sense and the definition of 'pure' causality (on this issue, see also Song et al., 2012). These two concepts may not be equivalent and they need to be assessed in separate econometric procedures, for example, a VECM can be run to test for 'pure' causality, where indeed y_t causes x_t, whilst a Granger causality test needs to be run to test for TLGH.

Empirically, to test the null hypothesis of Granger no-causality, a set of restrictions on the short-run and long-run parameters are required on the VECM expression (3). The *t*-statistics on the coefficient of error correction term indicates the existence of a long-run Granger causality, whereas, the significance of a joint χ^2-statistics on the lags of each explanatory variable indicates the presence of a short-run Granger causality. If there is a strong Granger causality, then the joint χ^2-statistics on both the short- and long-run coefficients should lead to a rejection of the null hypothesis.

However, in the econometric literature, there are other methods that can be employed to test the temporal relationship between variables. Specifically, the so-called Toda-Yamamoto-Dolado-Lütkepohl (TYDL) procedure (Dolado & Lütkepohl, 1996; Toda & Yamamoto, 1995) implements the Granger causality. When the variables under investigation are integrated, the methodology allows one to estimate a VAR with the standard optimal number of lags (k) and the maximal order of integration ($d_{\max}$) expected for the underlying process. The Granger causality test is run on the VAR by using only the identified $p = (k+d_{\max})$ lag length (within the TLGH, see Brida & Risso, 2009). Lean and Tang (2009) further implemented the TYDL methodology by that the Granger causal relationship may be unstable due to different shocks (e.g. economic turmoil, social events, environmental disasters and health hazard). A rolling subsample approach can highlight the persistency of the TLGH relationship across time.

Furthermore, in the time series methods some studies have used non-casual specifications such as the ARCH and the GARCH models which take into account volatility in the variables. However, these models have not gained popularity in the investigation of the TLGH likely due to the difficulty of justification of adequacy of such econometric models to the tested hypothesis. They are informative in understanding more sophisticated time series characteristics; in fact, they are often applied in context where the variables are very volatile such as stock market studies (see, for example, Chan, Lim, & McAleer, 2005).

Causal specifications such as the ARDL models can be found as developed by Pesaran, Shin, and Smith (2001). The ARDL approach is recognised to be preferable to other conventional cointegration approaches such as Engle and Granger (1987), Gregory and Hansen (1996) and Johansen's (1988) approaches, since it is applicable irrespective of whether the variables under investigation are stationary in the level, $I(0)$, or stationary in their first difference, $I(1)$, or mutually cointegrated. Also, it allows one to run a more robust testing procedure with a small sample size, than Johansen's approach, but at the same time, unlike the Engle and Granger procedure, it assumes an endogeneity condition amongst the variables under investigation.

Finally, those studies that attempt to evaluate a group of countries increasingly make use of panel data techniques, that further expand the previously assessed time series setting by including the individual dimension (i).

Econometric features

In terms of econometric methodology, the literature review shows an increasing sophistication due to the advance in the available statistical techniques. The great majority of the studies propose a vector error correction model (VECM). An important statistical requirement to run a Granger causality test is that the economic variables under analysis are characterised by a stationary stochastic process. When the unit root test (e.g. augmented Dickey-Fuller and Phillips–Perron) suggests that the variable is non-stationary, then this needs to be differenced d times to achieve stationary.

However, in the short run, $I(d)$ variables may diverge from each other, hence, in the long run they may be characterised by a common equilibrium and be cointegrated (Engle & Granger, 1987). Specifically, a cointegration test is run to test the null hypothesis of no-cointegration. From the literature review, most of the authors employ the Johansen reduced rank cointegration analysis, that can be regarded as a more robust and efficient procedure within a multivariate framework. Additionally, Oh (2005) uses the Engle and Granger approach in a bivariate framework and Tang et al. (2007) the Hylleberg-Engle-Granger-Yoo (HEGY) procedure for quarterly time series. Jackman and Lorde (2010) employ the Saikkonen, Stock and Watson DOLS. More recently, Tang and Tan (2013) employ the Fisher's formulae that combine the p-values of several cointegration tests, i.e. Engle and Granger, Johansen, Baneerijee, Dolado and Mestre to assess for the existence of a cointegrating relationship (Bayer & Hanck, 2013). Once a cointegrating relationship is assessed, the next step of the analysis is to run a VECM, to investigate short- and long-run dynamics as well as to test the Granger causality.

An additional time series approach used is the ARDL employed by Narayan (2004) for Fiji, Katircioglu (2009a, 2009b, 2009c) for Cyprus, Malta and Turkey, Kibara et al. (2012) for Kenya, Tang and Abosedra (2012) for Lebanon, Srinivasan et al. (2012) for Sri Lanka, Sarmidi and Salleh (2011), Othman et al. (2012) and Tang (2013) for Malaysia, Lee (2012) for Singapore and Hye and Khan (2013) for Pakistan. Such a methodology overcomes the problems of bias and inefficiency caused by the use of relatively small sample set.

Regarding the panel data, several approaches have been used, such as Bruno least squares dummy variables, generalised methods of moments and heterogeneous panel. To test the null hypothesis of no-cointegration, the Pedroni approach is mostly proposed.

With respect to the temporal causality, the Granger test is the most adopted one. Two papers employ the Toda and Yamamoto approach that generalises the Granger procedure (Brida, Barquet, & Risso, 2010; Lean & Tang, 2009). Furthermore, a Zapata and Rambaldi approach is proposed by Tang et al. (2007).

A different application of univariate time series is the ARCH carried out by Gunduz and Hatemi-J (2005) where a bootstrap Granger causality is also applied; or the implementation of an exponential generalised autoregressive conditional heteroskedasticity in mean model by Chen and Chiuo-Wei (2009) for Taiwan and South Korea where volatility and problems of autocorrelations are taken into account. As previously noted, these approaches have not gained popularity in testing the TLGH due to the adequacy of the method to the problem analysed.

Granger no-causality: short run

In the short run, the Granger no-causality test is applied in several papers. Specifically, the TLGH is confirmed for the following countries with a unidirectional Granger causality running from tourism growth to economic growth: South Africa (Akinboade & Braimoh, 2010), Taiwan (Chen & Chiuo-Wei, 2009), South Korea (Oh, 2005), Turkey (Isik, 2012; Zortuk, 2009), Spain (Cortés & Pulina, 2010; Nowak et al., 2007), for some origin countries towards Malaysia (Sarmidi & Salleh, 2011), the European and Latin American countries (Po & Huang, 2008), Australia, Germany, Japan, Singapore, Taiwan and Thailand when using the industrial production index as a proxy of GDP (Tang, 2011).

In addition, a bi-directional Granger causality is also found for South Korea (Chen & Chiuo-Wei, 2009), Turkey (Demiroz & Ongan, 2005), Greece (Dritsakis, 2004), Latin American countries (Lee & Chang, 2008) and Lebanon (Tang & Abosedra, 2012). Finally, a unidirectional temporal relationship running from economic growth to tourism

growth is detected for Fiji, Tonga, Solomon Islands and Papua New Guinea (Nayaran et al., 2010), African countries (Lee & Chang, 2008) and Barbados when using real GDP per capita (Lorde et al., 2011).

As further outcomes, within a micro study for USA entrepreneurs, Tang and Jang (2009) find that GDP growth drives air, casino, hotel and restaurant sales revenues. For Cyprus, Louca (2006) assesses a unidirectional Granger causality running from transport expenditure and hotel expenditure to tourism industry income and tourism arrivals, respectively.

Finally, in the case of Barbados, Jackman and Lorde (2010) do not find any confirmation of a temporal relationship between tourism and households expenditure growth.

Granger no-causality: long run

In all the studies, a cointegration relationship is found amongst the economic variables under investigation. The only exceptions are for Barbados where a DOLS is carried out (Jackman & Lorde, 2010), for India (Georgantopoulos, 2013) where the author only finds a unidirectional causality from tourism to economic growth in the short run, for Turkey (Arslanturk, Balcilar, & Ozdemir, 2011; Katircioglu, 2009c) where an ARDL model is run and, finally, for Brunei, China and Korea where the industrial production index is employed as a proxy of GDP (Tang, 2011), for Tirol-Austria (Brida & Giuliani, 2013) where the authors report this result as unexpected, for Estonia and Hungary (Chou, 2013) and for Malta and Egypt (Aslan, 2013). In addition, for Hong Kong the hypothesis is only validated in the short run (Jin, 2011).

The TLGH is validated for all the following countries: Pakistan, except for a few years as detected by an ARDL and a window rolling estimation (Hye & Khan, 2013), Lebanon (Tang & Abosedra, 2012), Jordan (Kreishan, 2011), Tunisia (Belloumi, 2010), Kenya (Kibara et al., 2012), South Africa (Akinboade & Braimoh, 2010), Singapore (Katircioglu, 2010a, 2011), North Cyprus (Katircioglu, 2010b), Barbados (Jackman, 2012), Antigua and Bermuda (Schubert et al., 2010), Brazil (Brida et al., 2011), Chile (Brida & Risso, 2009), Colombia (Brida, Pereyra, Risso, Such-Devesa, & Zapata-Aguirre, 2009; Brida & Monterubbianesi, 2010), Mexico (Brida, Sanchez Carrrera, & Risso, 2008), Nicaragua (Croes & Vanegas, 2008), Paraguay, Brazil and Argentina (Brida, Lanzilotta, Pereyra, & Pizzolón, 2013), USA (Isik, 2012), Fiji, Tonga, Salomon Islands and Papua Guinea (Nayaran & Prasad, 2003; Nayaran et al., 2010), Spain, Italy, Tunisia, Cyprus, Croatia, Bulgaria and Greece (Aslan, 2013), Romania (Surugiu & Surugiu, 2013), Cyprus, Latvia and Slovakia (Chou, 2013), Trentino-Alto Adige and South Tyrol, Italy (Brida & Risso, 2010; Brida et al., 2010; Brida & Giuliani, 2013), Italy (Cortés-Jiménez & Pulina, 2010), Turkey (Gunduz & Hatemi-J, 2005; Husein & Kara, 2011; Kaplan & Çelik, 2008), Greece (Dritsakis, 2004), Spain (Balaguer & Cantavella-Jordà, 2002; Cortés-Jiménez & Pulina, 2010), Organisation for Economic Co-operation and Development (OECD), Asia and Africa (Lee & Chang, 2008), Pakistan (Malik et al., 2010), Sri Lanka (Srinivasan et al., 2012), India (Mishra, Rout & Mohapatra, 2010), China (Deng et al., 2013a, 2013b), European Union (Lee & Brahmasrene, 2013), Africa (Fayissa et al., 2008; Kareem, 2013) and America, Latin America and Caribbean countries (Caglayan et al., 2012). Yet, some contrasting results can be found in Othman et al. (2012) when applying an ARDL.

Furthermore, a bi-directional Granger causality (i.e. tourism Granger-causes growth and vice versa) is assessed for the following destinations: Australia (Corrie, Stoeckl, & Chaiechi, 2013), Jamaica (Ahamefule, 2012; Amaghionyeodiwe, 2012; Ghartey, 2013), Aruba (Ridderstaat et al., 2013), Barbados (Lorde et al., 2011), Uruguay (Brida et al., 2013),

Canada (Othman et al., 2012), Latin American countries (Lee & Chang, 2008), nine small Caribbean countries (Apergis & Payne, 2012), Malaysia (Kadir & Jusoff, 2010; Lean & Tang, 2009; Othman et al. 2012; Tang, 2013), Pakistan (Khalil et al., 2007), Thua Thien Hue Province of Vietnam (Trang & Duc, 2013), Vietnam (Trang et al., 2013), Jiangsu Gaochun District of China (Wang & Xia, 2013), Malta (Katircioglu, 2009b), Austria (Othman et al., 2012), the Netherlands (Othman et al., 2012), Singapore (Othman et al., 2012), Spain (Cortés & Pulina, 2010; Nowak et al., 2007), Taiwan (Kim et al., 2006; Lee & Chien, 2008), Turkey (Demiroz & Ongan, 2005; Othman et al., 2012), Europe (Caglayan et al., 2012), Portugal, Israel, Turkey (Aslan, 2013), Bulgaria, Romania and Slovenia (Chou, 2013) and Italy (Massidda & Mattana, 2013).

A unidirectional temporal relationship running from economic development to tourism activity is detected for the following countries: Malaysia (Li et al., 2013), Ghana (Ahiawodzi, 2013), Pakistan (Jalil, Mahmood, & Idrees, 2013), South Korea, (Lee & Kwag, 2013), Sri Lanka (Bandula Jayathilake, 2013), Fiji (Narayan, 2004) and Cyprus (Katircioglu, 2009a), Czech Republic and Poland (Chou, 2013), East and South Asia, Oceania (Caglayan et al., 2012), Sichuan District of China (He & Zheng, 2011), Tanzania (Odhiambo, 2011) and Croatia (Payne & Mervar, 2010).

As further long-run outcomes, Durbarry (2004) assesses a bi-directional Granger causality between exports and GDP for Mauritius; Khan et al. (2005) and Nowak et al. (2007) find a bi-directional causality between tourism and imports for Singapore and Spain, respectively. Croes and Vanegas (2008) find that tourism development leads to a decrease in poverty in Nicaragua. Tang et al. (2007) assess that inward foreign direct investments drive tourism activity in China, whereas Katircioglu (2009a) finds a unidirectional causality running from trade volume to tourism. Lee (2012) assesses a unidirectional Granger causality from imports to economic growth in the case of Singapore.

There are also some conflicting results. For example, Katircioglu (2009a) finds a unidirectional Granger causality running from economic growth to tourism in Cyprus (Katircioglu, 2009a), whilst Arslanturk et al. (2011) do not check for Granger causality but employ a rolling window and time-varying VECM for the Turkish case. Similar results have been achieved by Kasimati (2011) who does not find any long-run relationship for the case of Greece when using the standard VECM-Granger and annual data for 1960–2010. Same conclusion is reached by Othman et al. (2012) when employing an ARDL. Hence, this finding has appeared to be in contrast with that by Dritsakis (2004) who employs the standard VECM-Granger but quarterly data from 1960 to 2000.

In the case of Tunisia, there are also contradictory results, Belloumi (2010) finds that the TLGH is valid, however, Cortés-Jiménez et al. (2011)'s findings support the hypothesis of a growth-led tourism in this country whilst further results suggest that tourism exports have contributed significantly towards financing the country's imports of capital goods, but they have not been the principal engine of long-term growth. Finally, inconclusive results have turned out in the case of Brunei, China and Korea when employing a monthly frequency and, hence, the industrial production index as a proxy of GDP (Othman et al., 2012; see also Shan & Ken, 2001; Tang, 2011).

Conclusions

In the present work, an in-depth analysis of the TLGH has been provided based on a revision of approximately 100 published empirical papers together with an insight into the economic theoretical background of the TLGH and a revision of the main methodological strategies adopted in the literature. The general conclusion is that, with few exceptions, the

TLGH is confirmed for the studied countries. The validity of the TLGH is consistent with the fact that economic agents can benefit by promoting the tourism activity as one of the lever mechanisms of the economic growth.

However, this result should not be generalised to all world countries mainly because of two main reasons. Firstly, although the number of empirical studies testing the TLGH is expanding, the number of countries that have been investigated is still rather limited and unbalanced. For example, so far, only 10 countries belonging to Africa and the Middle East have been studied whilst, for the European countries, in nine papers Turkey has been used as a case study. Secondly, there appears a sample bias since the countries, for which the TLGH is tested, are destinations characterised by a high tourism propensity and thus the weight of the tourism sector in such economies is sufficiently prominent to exert a positive impact on economic growth. Therefore, it may not be valid to state that the expansion of the tourism sector can contribute to the long-run growth of a country where the tourism sector incidence is negligible with respect to other economic sectors.

Some methodological issues have been highlighted by the present review. Some caution needs to be considered when aggregating tourism origin countries. Misleading results may in fact emerge both in the short run and long run, due to the fact that different source market segments may have rather diverse characteristics, for example, in terms of seasonality, dynamics and trend. Arguably, when testing the TLGH, one should aggregate origin countries that exhibit similar features in order to avoid biased results. Additionally, special attention should be paid to the use of total tourist arrivals as a proxy of the tourism sector for testing the TLGH: firstly, the TLGH often refers to the expansion of international tourism and thus this proxy does not tend to be accurate; secondly, domestic and international tourism demand are often characterised by different patterns in terms of market share size and economic impact and, particularly, where domestic demand presents a greater share, the two segments of demand should be analysed separately in order to capture the relationship between the endogenous variables (Pulina, 2010). For example, Cortés-Jiménez (2008) finds that international tourism contributes to the growth convergence in Spain and Italy as whole countries, whereas domestic tourism has such effect only in certain regions. Hence, it is advisable to investigate the TLGH by employing domestic and inbound demand as separate segments.

The analysis of the empirical results shows that in several cases there exists a long-run bidirectional Granger causality between tourism and GDP which can be regarded as an example for those countries whose aim is to achieve growth through the stimulus of tourism. If, on the one hand, tourism is driven by exogenous factors such as economic cycle and tourists' preferences, on the other hand, national government may play a key role opening to foreign investments and expanding international tourism. Hence, empirical findings have important implications in providing policy-makers directions for achieving a path of growth in the short and long run. Assessing the TLGH is useful to governments that are willing to expand tourism as a stimulus to their economy.

The present work shows the need to further expand the validation of the TLGH not only with the use of innovative methodological approaches, for example, taking into account possible non-linearity between tourism and growth, but also by analysing different types of tourism and other countries that are not characterised by tourism specialisation.

Based on the present review, more questions arise as follows. What are the relationships between tourism specialisation and other economic sectors? Are there crowding-out effects that undermine the overall welfare for the host community in the long run? Can the tourism-led growth be always thought as sustainable? In many destinations, a tourism specialisation

implies an intensive use of natural resources that leads to sustainability issues. In these circumstances, does the policy-maker intervene to internalise the negative externality, allowing for an expansion of the carrying capacity of the destination? Is the TLGH assessed upon favourable terms of trade? Or, does it depend on the output expansion thanks to the exploitation of scarce natural resources that ultimately compromises future development and welfare? Further investigations need to be carried out in order to analyse the link between tourism specialisation, growth and sustainability that can give adequate indications to policy-makers who have to shape present development without compromising future growth.

References

Ahamefule, L. A. (2012). A causality analysis of tourism as a long-run economic growth factor in Jamaica. *Tourism Economics*, *18*(5), 1125–1133.

Ahiawodzi, A. K. (2013). Tourism earnings and economic growth in Ghana. *British Journal of Economics, Finance and Management Sciences*, *7*(2), 187–202.

Ahmad, J. (2001). Causality between exports and economic growth: What do the econometric studies tell us? *Pacific Economic Review*, *6*(1), 147–167.

Akinboade, O., & Braimoh, L. A. (2010). International tourism and economic development in South Africa: A Granger causality test. *International Journal of Tourism Research*, *12*, 149–163.

Amaghionyeodiwe, L. A. (2012). A causality analysis of tourism as a long-run economic growth factor in Jamaica. *Tourism Economics*, *18*(5), 1125–1133.

Andriotis, K. (2002). Scale of hospitality firms and local economic development – evidence from Crete. *Tourism Management*, *23*(4), 333–341.

Apergis, N., & Payne, J. E. (2012). Tourism and growth in the Caribbean – evidence from a panel error correction model. *Tourism Economics*, *18*(2), 449–456.

Arslanturk, Y., Balcilar, M., & Ozdemir, Z. A. (2011). Time-varying linkages between tourism receipts and economic growth in a small open economy. *Economic Modelling*, *28*(1–2), 664–671.

Aslan, A. (2013). Tourism development and economic growth in the Mediterranean countries: Evidence from panel Granger causality tests. *Current Issues in Tourism*. Advance online publication. doi:10.1080/13683500.2013.768607

Balaguer, J., & Cantavella-Jordà, M. (2002). Tourism as a long-run economic growth factor: The Spanish case. *Applied Economics*, *34*, 877–884.

Balassa, B. (1978). Exports and economic growth: Further evidence. *Journal of Development Economics*, *5*, 181–189.

Bandula Jayathilake, P. M. (2013). Tourism and economic growth in Sri Lanka: Evidence from cointegration and causality analysis. *International Journal of Business, Economics and Law*, *2*(2), 22–27.

Bayer, C., & Hanck, C. (2013). Combining non-cointegration tests. *Journal of Time Series Analysis*, *34*(1), 83–95.

Belloumi, M. (2010). The relationship between tourism receipts, real effective exchange rate and economic growth in Tunisia. *International Journal of Tourism Research*, *12*(5), 550–560.

Blake, A., Sinclair, T. M., & Campos Soria, J. A. (2006). Tourism productivity. Evidence from the United Kingdom. *Annals of Tourism Research*, *33*(4), 1099–1120.

Brau, R., Lanza, A., & Pigliaru, F. (2007). How fast are small tourism countries growing? Evidence from the data for 1980–2003. *Tourism Economics*, *13*(4), 603–613.

Brida, J. G., Barquet, A., & Risso, W. A. (2010). Causality between economic growth and tourism expansion: Empirical evidence from Trentino-Alto Adige. *Tourismos: An International Multidisciplinary Journal of Tourism*, *5*(2), 87–98.

Brida, J. G., & Giuliani, D. (2013). Empirical assessment of the tourism-led growth hypothesis: The case of the Tirol–Südtirol–Trentino. *Tourism Economics*, *19*(4), 745–760.

Brida, J. G., Lanzilotta, B., Pereyra, J. S., & Pizzolón, F. (2013). A nonlinear approach to the tourism-led growth hypothesis: The case of MERCOSUR. *Current Issues in Tourism*. Advance online publication. doi:10.1080/13683500.2013.802765

Brida, J. G., & Monterubbianesi, D. P. (2010). Causality between economic growth and tourism expansion: Empirical evidence form some Colombian regions. *Journal of Tourism Challenges and Trends*, *III*(1), 153–164.
Brida, J. G., Pereyra, S. J., Risso, W. A., Such-Devesa, M. J., & Zapata-Aguirre, S. (2009). The tourism-led growth hypothesis: Empirical evidence from Colombia. *Tourismos: An International Multidisciplinary Journal of Tourism*, *4*(2), 13–27.
Brida, J. G., Punzo, L. F., & Risso, W. A. (2011). Tourism as a factor of growth: The case of Brazil. *Tourism Economics*, *17*(6), 1375–1386.
Brida, J. G., & Risso, W. A. (2009). Tourism as a factor of long-run economic growth: An empirical analysis for Chile. *European Journal of Tourism Research*, *2*(2), 178–185.
Brida, J. G., & Risso, W. A. (2010). Tourism as a determinant of long-run economic growth. *Journal of Policy Research in Tourism, Leisure and Events*, *2*(1), 14–28.
Brida, J. G., Sanchez Carrrera, E. J., & Risso, W. A. (2008). Tourism's impact on long-run Mexican economic growth. *Economics Bulletin*, *3*(21), 1–8.
Caglayan, E., Sak, N., & Karymshakov, K. (2012). Relationship between tourism and economic growth: A panel Granger causality approach. *Asian Economic and Financial Review*, *2*(5), 591–602.
Capó, J., Riera Font, A., & Rosselló Nadal, J. (2007). Tourism and long-term growth. A Spanish perspective. *Annals of Tourism Research*, *34*(3), 709–726.
Castro-Nuño, M., Molina-Toucedo, J. A., & Pablo-Romero, M. P. (2013). Tourism and GDP: A meta-analysis of panel data studies. *Journal of Travel Research*. Advance online publication. doi:10.1177/0047287513478500
Cernat, L., & Gourdon, J. (2012). Paths to success: Benchmarking cross-country sustainable tourism. *Tourism Management*, *33*, 1044–1056.
Chan, F., Lim, C., & McAleer, M. (2005). Modelling multivariate international tourism demand and volatility. *Tourism Management*, *26*(3), 459–471.
Chen, C.-F., & Chiuo-Wei, S. (2009). Tourism expansion, tourism uncertainty and economic growth: New evidence from Taiwan and Korea. *Tourism Management*, *30*, 812–818.
Chou, M. C. (2013). Does tourism development promote economic growth in transition countries? A panel data analysis. *Economic Modelling*, *33*, 226–232.
Copeland, B. (1991). Tourism, welfare, and de-industrialization in a small open economy. *Economica*, *58*, 515–529.
Corden, W. M., & Neary, J. P. (1982). Booming sector and de-industrialisation in a small open economy. *The Economic Journal*, *92*, 825–848.
Corrie, K., Stoeckl, N., & Chaiechi, T. (2013). Tourism and economic growth in Australia: An empirical investigation of causal links. *Tourism Economics*. Advance online publication. doi:10.5367/te.2013.0241
Cortés-Jiménez, I. (2008). Which type of tourism matters to the regional economic growth? The cases of Spain and Italy. *International Journal of Tourism Research*, *10*(2), 127–139.
Cortés-Jiménez, I., & Anton Clavé, S. (in press). Tourism in Spain: Southern European perspectives. In J.-C. Dissart, J. Dehez, & J.-B. Marsat (Eds.), *Tourism, recreation and regional development: Perspectives from France and abroad*. Farnham: Ashgate.
Cortés-Jiménez, I., Nowak, J., & Sahli, M. (2011). Mass beach tourism and economic growth: Lessons from Tunisia. *Tourism Economics*, *17*(3), 531–547.
Cortés-Jiménez, I., & Pulina, M. (2010). Inbound tourism and long run economic growth. *Current Issues in Tourism*, *13*(1), 61–74.
Croes, R. (2006). A paradigm shift to a new strategy for small island economies: Embracing demand side economics for value enhancement and long term economic stability. *Tourism Management*, *27*, 453–465.
Croes, R., & Vanegas Sr, M. (2008). Cointegration and causality between tourism and poverty reduction. *Journal of Travel Research*, *47*, 94–103.
Demiroz, D. M., & Ongan, S. (2005). The contribution of tourism to the long-run Turkish economic growth. *Ekonomický Časopis* (*Journal of Economics*), *53*(9), 880–894.
Deng, T., Ma, M., & Cao, J. (2013a). Tourism resource development and long-term economic growth – a resource curse hypothesis approach. *Tourism Economics*. Advance online publication. doi:10.5367/te.2013.0325
Deng, T., Ma, M., & Shao, S. (2013b). Has international tourism promoted economic growth in China? A panel threshold regression approach. *Tourism Economics*. Advance online publication. doi:10.5367/te.2013.0308

Di Liberto, A. (2013). High skills, high growth: Is tourism an exception? *The Journal of International Trade & Economic Development*, *22*(5), 749–785.
Dolado, J. J., & Lütkepohl, H. (1996). Making Wald test work for cointegrated VAR systems. *Econometrics Reviews*, *15*, 369–386.
Dritsakis, N. (2004). Tourism as a long-run economic growth factor: An empirical investigation for Greece using causality analysis. *Tourism Economics*, *10*(3), 305–316.
Dritsakis, N. (2012). Tourism development and economic growth in seven Mediterranean countries: A panel data approach. *Tourism Economics*, *18*(4), 801–816.
Durbarry, R. (2004). Tourism and economic growth: The case of Mauritius. *Tourism Economics*, *10*(4), 389–401.
Dwyer, L., Forsyth, P., & Spurr, R. (2004). Evaluating tourism's economic effects: New and old approaches. *Annals of Tourism Research*, *25*, 307–317.
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), 51–63.
Engle, R. F., & Granger, C. W. J. (1987). Cointegration and error correction: Representation, estimation and testing. *Econometrica*, *55*, 251–276.
Engle, R. F., Hendry, D. F., & Richard, J. F. F. (1983). Exogeneity. *Econometrica*, *51*, 277–304.
Fayissa, B., Nsiah, C., & Tadasse, B. (2008). Impact of tourism on economic growth and development in Africa. *Tourism Economics*, *14*(4), 807–818.
Feder, G. (1983). On exports and economic growth. *Journal of Development Economics*, *12*, 59–73.
Feng, R., & Morrison, A. M. (2007). Quality and value network. *Marketing travel clubs. Annals of Tourism Research*, *34*(3), 588–609.
Figini, P., & Vici, L. (2010). Tourism and growth in a cross section of countries. *Tourism Economics*, *16*(4), 789–805.
Georgantopoulos, A. G. (2013). Tourism expansion and economic development: Var/Vecm analysis and forecasts for the case of India. *Asian Economic and Financial Review*, *3*(4), 464–482.
Ghartey, E. E. (2013). Effects of tourism, economic growth, real exchange rate, structural changes and hurricanes in Jamaica. *Tourism Economics*. Advance online publication. doi:10.5367/te.2013.0228
Ghirmay, T., Grabowski, R., & Sharma, S. C. (2001). Exports, investment, efficiency and economic growth in LDC: An empirical investigation. *Applied Economics*, *33*(6), 689–700.
Granger, C. W. J. (1988). Causality, cointegration and control. *Journal of Economic Dynamics and Control*, *12*, 551–559.
Gregory, A. W., & Hansen, B. E. (1996). Residual-based tests for cointegration in models with regime shifts. *Journal of Econometrics*, *70*, 99–126.
Grossman, G. M., & Helpman, E. (1991). *Innovation and growth in the global economy*. Cambridge: MIT Press.
Gunduz, L., & Hatemi-J, A. (2005). Is the tourism-led growth hypothesis valid for Turkey? *Applied Economics Letters*, *12*, 499–504.
He, L.-H., & Zheng, X.-G. (2011). Empirical analysis on the relationship between tourism development and economic growth in Sichuan. *Journal of Agricultural Science*, *3*(1), 212–217.
Husein, J., & Kara, S. M. (2011). Research note: Re-examining the tourism-led growth hypothesis for Turkey. *Tourism Economics*, *17*(4), 917–924.
Hye, Q. M. A., & Khan, R. E. A. (2013). Tourism-led growth hypothesis: A case study of Pakistan. *Asia Pacific Journal of Tourism Research*, *18*(4), 303–313.
Isik, C. (2012). The USA's international travel demand and economic growth in Turkey: A causality analysis: (1990–2008). *Tourismos: An International Multidisciplinary Journal of Tourism*, *7*(1), 235–252.
Jackman, M. (2012). Revisiting the tourism-led growth hypothesis for Barbados: A disaggregated market approach. *Regional and Sectoral Economic Studies*, *12*(2), 15–26.
Jackman, M., & Lorde, T. (2010). On the relationship between tourist flows and household expenditure in Barbados: A dynamic OLS approach. *Economics Bulletin*, *30*, 1–9.
Jalil, A., Mahmood, T., & Idrees, M. (2013). Tourism-growth nexus in Pakistan: Evidence from ARDL bounds tests. *Economic Modelling*, *35*, 185–191.
Jin, J. C. (2011). The effects of tourism on economic growth in Hong Kong. *Cornell Hospitality Quarterly*, *52*(3), 333–340.
Johansen, S. (1988). Statistical analysis of cointegration vectors. *Journal of Economic Dynamics and Control*, *12*, 231–254.

Kadir, N., & Jusoff, K. (2010). The cointegration and causality tests for tourism and trade in Malaysia. *International Research Journal of Finance and Economics*, *2*(1), 138–143.
Kaplan, M., & Çelik, T. (2008). The impact of tourism on economic performance: The case of Turkey. *The International Journal of Applied Economics and Finance*, *2*(1), 13–18.
Kareem, O. A. (2013). A reassessment of tourism-exports led growth hypothesis in Africa. *American Journal of Tourism Research*, *2*(1), 130–140.
Kasimati, E. (2011). Economic impact of tourism on Greece's economy: Cointegration and causality analysis. *International Research Journal of Finance and Economics*, *79*, 79–85.
Katircioglu, S. T. (2009a). Tourism, trade and growth: The case of Cyprus. *Applied Economics*, *41*, 2741–2750.
Katircioglu, S. T. (2009b). Testing the tourism-led growth hypothesis: The case of Malta. *Acta Oeconomica*, *59*(3), 331–343.
Katircioglu, S. T. (2009c). Revising the tourism-led-growth hypothesis for Turkey using the bounds test and Johansen approach for cointegration. *Tourism Management*, *30*, 17–20.
Katircioglu, S. (2010a). Testing the tourism-led growth hypothesis for Singapore – an empirical investigation from bounds test to cointegration and Granger causality tests. *Tourism Economics*, *16*(4), 1095–1101.
Katircioglu, S. T. (2010b). International tourism, higher education and economic growth: The case of North Cyprus. *The World Economy*, *33*(12), 1955–1972.
Katircioglu, S. (2011). Tourism and Growth in Singapore. New extension from bounds test to level relationship and conditional Granger causality tests. *Singapore Economic Review*, *56*(3), 441–453.
Khalil, S., Mehmood, K. K., & Waliullah, K. (2007). Role of tourism in economic growth: Empirical evidence from Pakistan economy. *The Pakistan Development Review*, *46*(4), 985–995.
Khan, H., Toh, R. S., & Chua, L. (2005). Tourism and trade: Cointegration and Granger causality tests. *Journal of Travel Research*, *44*, 171–176.
Kibara, O. N., Odhiambo, N. M., & Njuguna, J. N. (2012). Tourism and economic growth in Kenya: An empirical investigation. *International Business & Economics Research Journal*, *11*(5), 517–528.
Kim, H. J., Chen, M.-H., & Jang, S. C. S. (2006). Tourism expansion and economic development: The case of Taiwan. *Tourism Management*, *27*, 925–933.
Kreishan, F. M. M. (2011). Tourism and economic growth: The case of Jordan. *International Management Review*, *7*(1), 89–93.
Krueger, A. O. (1980). Trade policy as an input to development. *American Economic Review*, *70*, 188–292.
Kumar, R. R., & Kumar, R. (2012). Exploring the nexus between information and communications technology, tourism and growth in Fiji. *Tourism Economics*, *18*(2), 359–371.
Lanza, A., & Pigliaru, F. (2000). Tourism and economic growth: Does country's size matter? *Rivista Internazionale di Scienze Economiche e Commerciali*, *47*, 77–85.
Lean, H. H., & Tang, C. F. (2009). Is the tourism-led growth hypothesis stable for Malaysia? A note. *International Journal of Tourism Research*, *12*(4), 375–378.
Lee, C.-C., & Chien, M.-S. (2008). Structural breaks, tourism development, and growth: Evidence from Taiwan. *Mathematics and Computers in Simulation*, *77*, 358–368.
Lee, C.-C., & Chang, C.-P. (2008). Tourism development and economic growth: Closer look to panels. *Tourism Management*, *29*, 180–192.
Lee, C. G. (2012). Tourism, trade, and income: Evidence from Singapore. *Anatolia*, *23*(3), 348–358.
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.
Lee, J. W., & Kwag, M. (2013). Green growth and sustainability: The role of tourism, travel and hospitality service industry in Korea. *Journal of Distribution Science*, *11*(7), 15–22.
Lemmetyinen, A., & Go, F. M. (2009). The key capabilities required for managing tourism business networks. *Tourism Management*, *30*, 31–40.
Li, C. C., Mahmood, R., Abdullah, H., & Chuan, O. S. (2013). Economic growth, tourism and selected macroeconomic variables: A triangular causal relationship in Malaysia. *Margin: The Journal of Applied Economic Research*, *7*(2), 185–120.
Lorde, T., Francis, B., & Drakes, L. (2011). Tourism services exports and economic growth in Barbados. *The International Trade Journal*, *25*(2), 205–232.

Louca, C. (2006). Income and expenditure in the tourism industry: Time series evidence from Cyprus. *Tourism Economics*, *12*(4), 603–617.
Lütkepohl, H. (1982). Non-causality due to omitted variables. *Journal of Econometrics*, *19*, 267–378.
Malik, S., Chaudhry, I. S., Sheikh, M. R., & Farooqi, F. S. (2010). Tourism, economic growth and current account deficit in Pakistan: Evidence from co-integration and causal analysis. *European Journal of Economics, Finance and Administrative Sciences*, *22*, 1450–2275.
Massidda, C., & Mattana, P. (2013). A SVECM analysis of the relationship between international tourism arrivals, GDP and trade in Italy. *Journal of Travel Research*, *52*(1), 93–105.
McKinnon, D. R. I. (1964). Foreign exchange constraint in economic development and efficient aid allocation. *Economic Journal*, *74*, 388–409.
Mishra, P. K., Rout, H. B., & Mohapatra, S. S. (2010). Causality between tourism and economic growth: Empirical evidence from India. *European Journal of Social Sciences*, *18*(4), 518–527.
Narayan, P. K. (2004). Fiji's tourism demand: The ARDL approach to cointegration. *Tourism Economics*, *10*(2), 193–206.
Nayaran, P. K., Nayaran, S., Prasad, A., & Prasad, B. C. (2010). Tourism, and economic growth: A panel data analysis for Pacific Island countries. *Tourism Economics*, *16*(1), 169–183.
Nayaran, P. K., & Prasad, B. C. (2003). Does tourism Granger causes economic growth in Fiji? *Empirical Economic Letters*, *2*(5), 199–208.
Nissan, E., Galindo, M. A., & Mendez, M. T. (2011). Relationship between tourism and economic growth. *The Service Industries Journal*, *31*(19), 1567–1572.
Nowak, J.-J., Sahli, M., & Cortés-Jiménez, I. (2007). Tourism, capital good imports and economic growth: Theory and evidence for Spain. *Tourism Economics*, *13*(4), 515–536.
Odhiambo, N. M. (2011). Tourism development and economic growth in Tanzania: Empirical evidence from the ARDL-bounds testing approach. *Economic Computation & Economic Cybernetics Studies and Research*, *45*(3), 71–83.
Oh, C.-O. (2005). The contribution of tourism development to economic growth in the Korean economy. *Tourism Management*, *26*, 39–44.
Othman, R., Salleh, N. H. M., & Sarmidi, T. (2012). Analysis of causal relationship between tourism development, economic growth and foreign direct investment: An ARDL approach. *Journal of Applied Sciences*, *12*(12), 1245–1254.
Pablo-Romero, M. P., & Molina, J. A. (2013). Tourism and economic growth: A review of empirical literature. *Tourism Management Perspectives*, *8*, 28–41.
Park, J. H., & Prime, P. B. (1997). Export performance and growth in China: A cross-provincial analysis. *Applied Economics*, *29*, 1353–1363.
Payne, J. E., & Mervar, A. (2010). The tourism-growth nexus in Croatia. *Tourism Economics*, *16*(4), 1089–1094.
Pegg, S. (2010). Is there a Dutch disease in Botswana? *Resources Policy*, *35*(1), 14–19.
Pesaran, H. M., Shin, Y., & Smith, R. J. (2001). Bounds testing approaches to the analysis of level relationships. *Journal of Applied Econometrics*, *16*, 289–326.
Po, W.-C., & Huang, B.-N. (2008). Tourism development and economic growth – a nonlinear approach. *Phisica A*, *387*, 5535–5542.
Pulina, M. (2010). Modelling and forecasting length of stay: An integrative approach. *Anatolia: Journal of Tourism and Hospitality Management*, *21*(2), 305–321.
Ridderstaat, J., Croes, R., & Nijkamp, P. (2013). Tourism and long-run economic growth in Aruba. *International Journal of Tourism Research*. Advance online publication. doi:10.1002/jtr.1941
Sakai, M. (2009). Public sector investment in tourism infrastructure. In L. Dwyer & P. Forsyth (Eds.), *International handbook on the economics of tourism* (pp. 266–279). Cheltenham: Edward Elgar.
Santana-Gallego, M., Ledesma-Rodriguez, F., Perez-Rodriguez, J., & Cortés-Jimenez, I. (2010). Does common currency promote countries' growth via trade and tourism? *The World Economy*, *33*(12), 1811–1835.
Sarmidi, T., & Salleh, N. H. M. (2011). Dynamic inter-relationship between trade, economic growth and tourism in Malaysia. *International Journal of Economics and Management*, *5*(1), 38–52.
Schubert, F. S., Brida, J. G., & Risso, W. A. (2010). The impacts of international tourism demand on economic growth of small economies dependent of tourism. *Tourism Management*, *32*(2), 377–385.
Shan, J., & Ken, W. (2001). Causality between trade and tourism: Empirical evidence from China. *Applied Economics Letters*, *8*, 279–283.

Sheng, L. (2011). Taxing tourism and subsidizing non-tourism: A welfare-enhancing solution to "Dutch disease"? *Tourism Management*, *32*, 1223–1228.
Song, H., Dwyer, L., Li, G., & Cao, Z. (2012). Tourism economics research: A review and assessment. *Annals of Tourism Research*, *39*(3), 1653–1682.
Spurr, R. (2009). Tourism satellite accounts. In L. Dwyer & P. Forsyth (Eds.), *International handbook on the economics of tourism* (pp. 283–299). Cheltenham: Edward Elgar.
Srinivasan, P. K., Kumar, S., & Ganesh, L. (2012). Tourism and economic growth in Sri Lanka: An ARDL bounds testing approach. *The Romanian Economic Journal*, *45*, 211–226.
Surugiu, C., & Surugiu, M. R. (2013). Is the tourism sector supportive of economic growth? Empirical evidence on Romanian tourism. *Tourism Economics*, *19*(1), 115–132.
Tang, C. (2011). Is the tourism-led growth hypothesis valid for Malaysia? A view from disaggregated tourism markets. *International Journal of Tourism Research*, *13*, 97–101.
Tang, C. F. (2013). Temporal Granger causality and the dynamic relationship between real tourism receipts, real income, real exchange rates in Malaysia. *International Journal of Tourism Research*, *15*(3), 272–284.
Tang, C. F., & Abosedra, S. (2012). Small sample evidence of the tourism-led growth hypothesis in Lebanon. *Current Issues in Tourism*. Advance online publication. doi:10.1080/13683500.2012.732044
Tang, C. F., & Tan, E. C. (2013). How stable is the tourism-led growth hypothesis in Malaysia? A view from disaggregated tourism markets. *Tourism Management*, *37*, 52–57.
Tang, H. C.-H., & Jang, S. C. S. (2009). The tourism-economy causality in the United States: A subindustry level examination. *Tourism Management*, *30*, 553–558.
Tang, S., Selvanathan, E. A., & Selvanathan, S. (2007). The relationship between foreign direct investment and tourism: Empirical evidence from China. *Tourism Economics*, *13*(1), 25–39.
Toda, H. Y., & Yamamoto, T. (1995). Statistical inference in vector autoregressions with possibly integrated process. *Journal of Econometrics*, *66*, 225–250.
Trang, N. H. M., & Duc, N. H. C. (2013). The contribution of tourism to economic growth in Thua Thien Hue Province, Vietnam. *Middle East Journal of Business*, *4*(1), 70–77.
Trang, N. H. M., Duc, N. H. C., & Dung, N. T. (2013). Empirical assessment of the tourism-led growth hypothesis – the case of Vietnam. *Tourism Economics*. Advance online publication. doi:10.5367/te.2013.0307
UNWTO. (2010). *UNWTO World Tourism Barometer.* Interim Update, April. Retrieved February 01, 2013, from United Nations World Tourism Organization Website: www.unwto.org
Vanegas, Sr, M., & Croes, R. R. (2003). Growth, development and tourism in small economy: Evidence from Aruba. *International Journal of Tourism Research*, *5*, 315–330.
Wahab, S., & Cooper, C. P. (2001). *Tourism in the age of globalisation*. London: Routledge.
Wang, B., & Xia, M. (2013). A study on the relationship between tourism industry and regional economic growth – a case study of Jiangsu Gaochun district. *Modern Economy*, *4*, 482–488.
Weng, C.-C., & Wang, K.-K. (2004). Scale and scope economies of international tourist hotels in Taiwan. *Tourism Management*, *25*, 761–769.
WTTC. (2012). *Travel & Tourism Economic Impact 2012*. Retrieved February 01, 2013, from World Travel & Tourism Council Website: www.wttc.org
Zortuk, M. (2009). Economic impact of tourism on Turkey's economy: Evidence from cointegration tests. *International Research Journal of Finance and Economics*, *25*, 231–239.