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How does institutional quality moderates the impact of tourism on economic growth? Startling evidence from high earners and tourism-dependent economies

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Abstract

Over the years, policymakers in tourism-reliant economies have been saddled with the mandate to not only accelerate economic growth but also increase the living standards of domestic citizens. Tourism development has been highlighted in the extant literature as a route to attaining sustainable economic growth. Past studies affirm that tourism contributes significantly to both the wealth of nations and cultural diffusion. However, whether institutional quality moderates the impact of tourism on economic growth has yet to be given sufficient academic attention. The study uses data from 2002 to 2017 and the generalised method of moments methodology, while the Dumitrescu–Hurlin panel causality test is applied to check the robustness of results. The empirical results show that a 1% increase in tourist arrivals or air transport led to a 0.41% and 0.17% increase in economic growth, respectively. However, when particular governance variables are taken into consideration, this impact is reduced to −0.09% and −0.02% for both tourism proxies. This implies that the influence of governance on the tourism-led growth hypothesis through an interaction term between institutional quality and tourist arrivals was found to reverse the impact of tourism on growth from positive to negative in both high-earning and tourism-dependent countries. While

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infrastructure also contributes to economic growth, its impact is slightly higher in top earners than in tourism-dependent economies. The results of the study suggest that weak institutions in both country groups allow corrupt practices, which divert the positive impact that tourism should have on economic growth.

Keywords
Arellano and Bond GMM, economic growth, governance, high earners, tourism, tourism dependence, tourism-led growth hypothesis

Introduction

Tourism is considered a positive sector by which to address various economic issues (unemployment, poverty, foreign exchange, financial debt, infrastructural development and monetary instabilities) that give rise to sustainable growth, industrialisation, urbanisation, globalisation and development (Chulaphan and Barahona, 2018; Tang and Abosedra, 2014; Tugcu, 2014). Moreover, through tourism, there has been a supply of foreign exchange for financing foreign-domestic debts, taxation, job opportunities and wealth creation. Although this has been associatively linked with expansion in the inbound and outbound benefits of tourists alongside its economic expenditure contributions, it is made possible through the windows of demand and supply channels of tourists' involvement in the areas of employment, job creation and human capacity development (Nassani et al., 2019; Rivera, 2017). Tourism has also helped the stimulation of foreign investments and currency exchange rate (Sokhanvar, 2019), leading to an increase in foreign exchange earnings and adding to the real gross domestic product (GDP), among other significant impacts of tourism on economic growth. For example, Chulaphan and Barahona (2018) opine that the influx of tourists from South Asia and Oceania accounted for Thailand's economic growth and development. Furthermore, the work of Habibi et al. (2018) establishes a positive contributory impact of tourism to Iran's economy in spite of the country's geopolitical status.

However, empirical studies have revealed a mixed connection between tourism development and economic growth as an element of economic expansion regarding the increase in the standards of living at tourism destinations through income rise and money circulations, trade openness (TRO; import and export trade), urbanisation and industrialisation. This applies more specifically to tourism-dependent countries, which support the hypothetical injunction of the tourism-led economic growth hypothesis (TLGH). Thus, its premise is established on the basis that tourism is one of the major determinants of long-term economic growth, although the substantial significance of economic growth may vary among tourism-dependent countries such as noted in case of other countries such as China and Germany revealing a weak nexus with economic growth (Chen and Chiou-Wei, 2009; Shahzad et al., 2017). In recent times, tourism and the service industry have continued to exert a significant effect on the economies of many tourist destinations, and the impacts of institutional quality and other macroeconomic indicators on these economies all demonstrate significant roles. Given the foregoing, it becomes imperative to shift attention to a gap in the literature, which is the area of governance factors as a backup force, driving the pillars of economic growth via tourism. This study addresses the issues of difference between high tourism earners, such as Spain, Mexico, Italy, India, the United Kingdom, Japan, the United States, Germany and France, among others, and tourism-dependent economies, such as Macau (43.9%), the

Maldives (41.5%), the British Virgin Islands (30.3%), Aruba (28.6%), the Seychelles (21.3%), Anguilla (21%), the Bahamas (19.4%), Vanuatu (18.8%), the former Netherlands Antilles (17.0%) and Antigua and Barbuda (15.5%) among others (www.worldatlas.com; online retrieved 2018). However, there have been arguments perceived from the economic perspective that high earners tend to constrain their expenditure to maximise satisfaction, which may be socially bilateral based on public opinion. Furthermore, literature links between governance and economic growth indicators may be projective on the ties of decision-making concerning policy decision points in the areas of politics, scalability and flexibility of policies that drive a nation's economy, resource allocation and planning execution and implementation.

The heterogeneity in governance has also been viewed from the standpoint of structures and processes designed to ensure accountability, transparency, responsiveness, rule of law (ROL), stability, equity and inclusiveness, empowerment and broad-based participation. Countries with a more robust economy, such as Germany and China, are noted not to depend on tourism due to its diverse means of generating revenue via industrialisation, technology, and so on. This also projects the manner in which public affairs are managed (Shahzad et al., 2017). Based on this assertion, Dogru and Bulut (2018) explain that tourism development and economic growth are interdependent with a bidirectional causality relationship, which implies that tourism can stimulate economic growth and development, especially in the area of governance. It is important to establish that the aspect of governance has been indicatively implied as policy in the literature, which is more of a passive than an active indicator. Good governance is expected to promote economic expansion through active policy formulation and implementation in areas that pertain to the economic welfare of a nation while limiting the forces of political instability and corruption, which are the main factors that hamper governance. The direct or indirect impact of governance determines the development quotient of any sector of government of a nation. For instance, issues of geopolitical instability and corruption can limit economic growth, as witnessed in African countries (Musavengane et al., 2020) and Southern Mediterranean countries such as Turkey (Akadiri et al., 2019).

Furthermore, Tang (2018) posits that governance has been neglected in tourism research. Therefore, the relevance of governance as an economic indicator is to be considered as an integral factor in determining the cardinality of tourism and economic growth. It can also differentiate the viability of growth among countries based on the policy being adopted or adapted to foster development and growth. Government is the central core of governance, the binding force at the hem of development and economic growth, either economically oriented or geopolitically inclined, with tenacity tailed down to politics, especially in the aspects of governance indices, which span through areas, such as law index, government effectiveness (GOV), control of corruption (COC), regulatory quality index (RQI), voice and accountability (VOA) index, political stability (POL) index, corruption perceptions index and political right index, among others, which define the fate of sustainable economic development among nations (Tang, 2018). Thus, since tourism demand is responsive to governance indices, it is vital to enhance the current literature, as this has not been documented in previous studies.

Considering the highlighted motivations, the current study aims to investigate the role of tourism development or the TLGH argument in the sustainable development of high-earning and tourism-dependent economies vis-à-vis the role of the quality of institutions. Thus, mirroring this standpoint, this study adds to the current body of knowledge in terms of the scope it considers, which is a comparison of tourism-dependent economies on one hand and high earners on the other. Secondly, this study adopts a dynamic generalised method of moment methodology, which is

known to ameliorate the shortcomings of conventional panel estimation techniques. The use of this technique helps to provide robust and reliable coefficients/estimates for policy insights in the selected blocks of the countries investigated. The robustness of the results is confirmed by applying a Dumitrescu–Hurlin panel causality test. In summary, our study contributes to the TLGH while accounting for the fact that institutional quality is already highlighted as pertinent for further policy construction.

The following section presents a review of the existing literature with an emphasis on existing research on the TLGH as well as the role governance plays in the growth impact of the tourism industry. This is followed by the "Data and methodology" section. The fourth section discusses the results and implications of the research findings, while the fifth section concludes the study with requisite policy direction.

Literature review

The TLGH has been extensively studied in the tourism literature with several dimensions of the hypothesis documented, such as empowerment of women (Nassani et al., 2019) and air transport (Balsalobre-Lorente et al., 2020), among others. Etokakpan et al. (2019) did not find any significant relationship between the TLGH and the agriculture-led growth hypothesis. Chulaphan and Barahona (2018) support the TLGH in terms of exports and employment generation derived through the industry due to an improvement in basic amenities and infrastructure, not excluding a rise in attractive businesses and leisure sites, which attract tourists to visit Thailand. Moreover, if not effectively harnessed, there is a possibility of decline in the effectiveness of this sector. Accordingly, Habibi et al. (2018) found a positive significant relationship between tourism and economic growth in Iran, supporting the TLGH in the country. Evidently, Fahimi et al. (2018) affirm the TLGH, especially in microstates between the years 1995 and 2015. Significantly, the contribution of tourism is on a decline over the years (i.e. export earnings and real gross domestic product). This decline could be associated with the level of awareness/marketing of tourism, high expenditure (hotels and housing, transportation and various taxes, etc.), global warming (carbon emissions), terrorism and other governance indicators, which are not conducive for tourism.

Nassani et al. (2019) investigate the role of finance and empowerment through tourism. They confirm the role of financial intermediaries in empowering women through tourism development, which invariably creates economic stability. Furthermore, they support the TLGH through recommendations of tourism expansion and the promotion of rural-based tourism. Tourism has also been attributed as a growth sector since it opens rare opportunities for economic diversification for economic growth in the area of human capital development. Accordingly, Fahimi et al. (2018) suggest that tourism has been a determining factor in human capital development in many nations. Conversely, Rivera (2017) argues that expansion in tourism while synergising human capacity development, economic growth and tourism. Interestingly, the study reveals the fact that tourism does not cause human capacity development. Evidently, a growth in tourism as seen in developing nations does not foster human capacity development, but such development in human capacity could foster tourism growth.

But how do economic growth and the tourism industry correlate to governance indicators? Governance, in line with GOV, measures the quality of public/civic service, policy formulation/implementation and the credibility of a government's commitment to keeping these qualities high. However, GOV for a tourism-dependent state is very weak when compared with high-earning countries. This implies that relatively few tourism-dependent states (Macau, the Seychelles and the

Bahamas) are committed to a tourism-led growth economy, with a relatively significant ulterior motive of governing stakeholders, while – on the contrary – the high earners operate a more diversified economy with more regulated structures, showing moderate GOV in the long term. Accordingly, Tekken and Kropp (2015) assert that bad governance is a structural problem limiting both growth and development. Evidently, the construction of tourism mega-complexes in an area, where the underground water quality and quantity is affected by agricultural over-exploitation, does not take into account the potential problems that may arise due to such expansion. Such decisions are observed in tourism-dependent states, as opposed to high-earning states.

Trust is a crucial factor in governance (van der Zee et al., 2017). According to Kaufman et al. (2010), COC is measured according to the extent to which public power is exercised for private gains. Corruption is a major factor limiting the effectiveness of governance in terms of economic growth though measures have been tailored to curb its negative effects in both the short and long term (Nunkoo, 2017; Tang, 2018). The COC for a tourism-dependent state is generally weak when compared with high earners, which display an average strength (Germany, France, Japan, the United States and the United Kingdom), which implies a more stable economy. However, it is believed that higher-earning countries do not conform to the TLGH due to the vast industrial impact and diversified economy generation as compared with their counterparts. Tang (2018) reveals that corruption control is a crucial factor, which fosters an increase or decline in demand for tourism, which invariably implies that countries with good corruption control will likely attract more visitors to a destination, thereby leading to economic growth. This is applicable in high-earning countries with a more stable corruption control index, which negates the corruption index trend in tourism-dependent states.

Societal perception is also crucial in governance as it reveals how corruption is being perceived. According to a 2017 report, tourism-dependent states are perceived to be more corrupt when compared with high earners. Tang (2018), investigating corruption control in Malaysia, suggests that international tourist arrivals in Malaysia declined by around 5.8% (approximately 1.5 million tourists) between 2014 and 2017 when the corruption perception ranking of Malaysia dropped from 50th to 62nd position. This implies that the perception of tourists towards corruption can instil a negative effect on economic growth.

The ability of the government to formulate and implement sound policies and regulations which permit and promote economic development is as important as governance itself. As per the regulation index, tourism-dependent states are weak in this area, while high earners are generally strong (see Tables 1 and 2 in Online Appendix). Tang (2018) pointed out the low (0.696) regulatory impact quality in Malaysia as against other indicators. Santos and Giraldi (2017) note that innovative governance should unveil and encompass the different levels of power in the form of a public–private partnership (top-down and bottom-up participation) in the decision-making process. Such inclusion is predominant in high-earning states but relatively weak in tourism-dependent states. Hence, there should be a sociopolitical inclusion of various stakeholders in planning and implementing various decisions as regards economic development (inclusive governance).

The VOA index captures the extent to which citizens can participate in selecting their government as well as freedom of expression, association and media. The accountability index for tourism-dependent states is very weak, while it is strong for high earners. Tang (2018) contends that, specifically in Malaysia, VOA does not significantly influence inbound tourism, showing that tourists are not particularly concerned about the level of freedom at their disposal. Demir and Gozgor (2018) found that a negative relationship exists between the freedom of the press and

Table 1. Description of variables included in the model.

Variable	Abbreviation	Source
GDP per capita (constant 2010 USD)	RGDP	WDI
Tourist arrivals	TOUR	WDI
Trade openness	TRO	WDI
Labour force	LAB	WDI
Gross fixed capital formation	GFCF	WDI
Rule of law index (−2.5 weak; 2.5 strong)	ROL	WDI
Government effectiveness index (−2.5 weak; 2.5 strong)	GOV	WDI
Control of corruption (−2.5 weak; 2.5 strong)	COC	WDI
Regulatory quality index (−2.5 weak; 2.5 strong)	RQI	WDI
Voice and accountability index (−2.5 weak; 2.5 strong)	VOA	WDI
Political stability index (−2.5 weak; 2.5 strong)	POL	WDI
Institutional quality index	IQI	Author's calculation
Infrastructure	INFRA	WDI

WDI: World Development Indicator.

Table 2. List of countries included in the sample.

S/N	Tourism-dependent economies	S/N	High earners from tourism		
1	Albania	1	Australia	19	The Netherlands
2	Armenia	2	Austria	20	New Zealand
3	The Bahamas	3	Belgium	21	Poland
4	Belize	4	Canada	22	Portugal
5	Cabo Verde	5	Croatia	23	Russian Federation
6	Cambodia	6	France	24	Saudi Arabia
7	Dominican Republic	7	Germany	25	Singapore
8	Gambia	8	Greece	26	Spain
9	Jamaica	9	Hong Kong SAR, China	27	Sweden
10	Jordan	10	India	28	Switzerland
11	Lebanon	11	Indonesia	29	Thailand
12	Mauritius	12	Ireland	30	Turkey
13	Montenegro	13	Italy	31	United Arab Emirates
14	Nepal	14	Japan	32	United Kingdom
15	Rwanda	15	Korea, Rep.	33	United States
16	Sri Lanka	16	Macau SAR, China		
17	Tanzania	17	Malaysia		
18	Vanuatu	18	Mexico		

inbound tourism, explaining that there could be several aspects in which freedom of the press can significantly affect tourism development and economic growth (i.e. institutional quality, asymmetric information, efficiency effect, image effect, etc.). Furthermore, the freedom of the press has a strong effect on institutional quality since it affects the ROL and the transparency of elections; its effect is seen to shape public opinion and play an important role in the political decision-making process. As such, it drives the feedback mechanism of rules of law and policies.

The POL index measures the likelihood of a government being destabilised or overthrown by unconstitutional or violent means, including politically motivated violence and terrorism. The POL of any nation determines its tenacity for economic growth. Tourism-dependent states are relatively weak, while high earners are more politically stable. Tang (2018) notes that POL is the second most important factor in explaining the increase in tourism demand in Malaysia. POL, when increased by 1%, would increase the demand for tourism by approximately 1.4%. Becken and Carmignani (2016) hypothetically assume that in Russia and Sri Lanka, if POL is maintained, yearly tourist arrival growth rates of 20% and 50% will be recorded. This gives credence to the fact that high earners are politically stable and thus likely to foster a higher growth rate than regions with political instability. Hence, Gozgor et al. (2017) note that the significant role of the military in politics has been a more crucial issue in Turkey since almost 50% of Turkey's tourist inflows are from EU countries, where military intervention in politics is less of an issue. The study concluded that there should be a reduction of military intervention in politics and this will, in turn, increase tourist inflows, especially from EU countries, which are the major tourists in the region.

Data and methods

Data

The description of the variables included in the model is provided in Table 1. Data were collected from World Development Indicators (WDI) and World Governance Indicators from the World Bank for the period of 2002–2017. The index for institutional quality is compiled by the authors by utilising the average of the six governance indicators provided by the World Bank.

Table 2 presents the list of countries included in the sample. This list is a combination of both top earners from tourism and low-income tourism-dependent economies. To achieve the aim of this study, we begin by selecting our sample size according to international tourist receipts available in millions of USD, downloaded from the World Bank's Development Indicator database. Since it is common knowledge that tourism-dependent economies may not be the best in governance matters as their economies are either developing or less developed, we attempt to overcome any potential bias through our choice of a mix of both heavily dependent economies and higher earners such as India with a range of weak governance variables, as presented in Tables 1 and 2 in Online Appendix. Additionally, the use of several indicators helps to account for variations in governance performance for both clusters of countries. Hence, with a total sample of 51 economies around the world, we split our sample into high-earning and low-earning tourist economies by creating a dummy variable based on the mean of the available dataset. This dummy is created using STATA 15 software to divide sample size into high-earning and low-earning economies.

Model and methods

A dynamic panel data model is adopted to estimate the moderating effect of governance in the TLGH for the case of tourism-dependent countries and high earners from tourism. Considering the structure of the data, the dynamic behaviour of the economic relationship among the variables of interest is best assessed using a dynamic panel estimation model and technique. Dynamic panel data models can closely capture reality better than any other estimation technique using panel data (Seetaram, 2012). The dynamic panel model is specified as follows

$$y_{it} = \delta y_{i,t-1} + X'_{it}\beta + u_i + \eta_{it} \quad (1)$$

$$RGDPC = f(TOURISM, INFRA, TRADE\ OPENNESS, LAB, GFCF, INSTITUTION) \quad (2)$$

$$\begin{aligned} RGDPC_{it} = {} & \alpha_0 + \beta_1 TOUR_{it} + \beta_2 INFRA_{it} + \beta_3 TRO_{it} + \beta_4 LAB_{it} + \beta_5 GFCF_{it} + \\ & \beta_6 ROL_{it} + \beta_7 GOV_{it} + \beta_8 COC_{it} + \beta_9 RQI_{it} + \beta_{10} VOA_{it} + \beta_{11} POL_{it} + \varepsilon_{it} \end{aligned} \quad (3)$$

where y_{it} is the dependent variable for each country i over the period t, X'_{it} is the matrix of independent variables for each country over the period t, u_i is used to denote each country-specific effect and η_{it} is the remainder disturbance term. In equation (3), RGDPC is the real gross domestic product per capita (constant 2010 USD); the tourist arrivals are represented by TOUR; trade openness is represented by TRO; LAB represents labour force; GFCF represents gross fixed capita formation; rule of law index is represented by ROL; government effectiveness index is given by GOV; control of corruption is given by COC; regulatory quality index is represented by RQI; VOA represents voice and accountability index; political stability index is given by POL and institutional quality index is given by IQI, which is the average of all institution variables. Infrastructure variable (INFRA) is generated using the following variables: access to electricity (percentage of population), air transport (passengers carried), individuals using the Internet (percentage of population), fixed telephone subscription (per 100 people) and fixed broadband subscription (per 100 people). Data for the infrastructure variable are collected from WDI. The index has generated using principal component analysis (PCA) after fullfilling the basic requirements of generating PCA, that is, taking the average and standard deviation of given variables, and then, based on these two standardised variables, checking correlation and eigenvalues of the given variables. If the eigenvalues are greater than 2 and there exists a strong correlation among variables, PCA can be generated.

As indicated by Baltagi (2005), a dynamic model is portrayed by two wellsprings of persistence over a period. To start with, autocorrelation coming about because of the incorporation of the lagged y variable as an additional independent variable. That is, $\delta y_{i,t-1}$ is associated with the error term $\eta_{it}(E(\delta y_{i,t-1}, \eta_{i,t}) \neq 0)$. The second source of persistence is the unobserved main impacts and interaction impact, which portray the heterogeneity among units. One of the significant strategies for evaluating dynamic panel data models particularly when managing numerous nations (N) and in a brief timeframe (T) is the Arellano and Bond generalised method of moment (GMM), which is used in the fourth section to estimate equations (2) and (3). Furthermore, the combination of time series and cross-sectional dimensions is plagued with issues of heteroscedasticity and endogeneity in econometric modelling. To ameliorate for the combined dimension issues, the system GMM presents a reliable coefficient and estimates, especially in scenarios, where the cross-sectional dimension is greater than the time dimension. The GMM method also accommodates for the lagged endogenous variable to circumvent endogeneity issues (Usman and Yakubu, 2019).

Diagnostic tests

Arellano and Bond (1991) propose two tests to approve the estimation. First is that there is no second-order serial relationship for the rest of the unsettling influences of the differenced equation. This is a basic condition, as the consistency of the GMM estimator lays on the supposition that $E(\Delta\eta_{it} - \Delta\eta_{i,t-2}) = 0$. It should be noted that the first order is normal in the first differenced dynamic panel data models. Accordingly, we dismiss the invalid speculation of no autocorrelation

(AR) for AR (1) and acknowledge the null hypothesis for AR (2). The second is the instrument validity test. This becomes essential on account of the potential relationship between the lagged explained variable and the rest of the disturbance term. To decide instrument validity, the Sargan–Hansen test of over-identifying restrictions is utilised. For these two tests, we should acknowledge the null hypothesis of instrument validity.

Dumitrescu–Hurlin panel causality test

A Dumitrescu–Hurlin panel causality test (2012) is applied to examine the unidirectional and bidirectional causality among variables selected in the model, in which the GMM test fails to provide. Public policymakers necessitate the existing causal relationship among variables to develop suitable policies. Therefore, Dumitrescu and Hurlin (2012) developed a Granger causality test, which is useful for both unbalanced and heterogeneous panels as well as for panels, where T > N or T < N. This test can resolve the problems aroused by the homogeneity assumption of a standard Granger causality test and can tackle the problem of cross-sectional dependence in panel data. Dumitrescu and Hurlin (2012) used Monte-Carlo simulations to prove that calculated test statistics are robust for a small data set, and this resolves the issue of cross-sectional dependence. The econometric form of this linear heterogeneous model is as follows

$$Y_{i,t} = \delta_i + \sum_{i=1}^{J} \varphi_i^{(k)} Y_{i,t-k} + \sum_{i=1}^{J} \gamma_i^{(k)} X_{i,t-k} + \varepsilon_{i,t} \tag{4}$$

where $J \in N^+$ and $J \in N^*$ and $\gamma_i = (\gamma_i^1, \ldots, \gamma_i^k), \delta_i, \varphi_i^k$ *and* γ_i^k show constant term, the parameter of lag and slope of coefficient, respectively. This test assumes the null hypothesis, as there exists no homogenous granger causality across cross-sectional units, while the alternate hypothesis assumes the existence of at least one granger causality across cross-sectional units. The functional form of the null and alternate hypothesis is as follows

$$\mathrm{H}_0 = \beta_i = 0$$

$$H_1 = \begin{cases} \beta_{i=0} \ \forall_i = 1, 2, \ldots \ \ldots \ N \\ \beta_{i\neq 0} \ \forall_i = N_1 + 1, N_2 + 2, \ldots \ \ldots, N \end{cases}$$

Results and discussion

Pre-estimation diagnostics

Table 3 presents the descriptive statistics of the variables in the study. The mean RGDPC (in) is 22775.43, while the minimum is 382.521 and the maximum is 77684. The mean tourist arrivals in the 51 countries are 13,400,000, while the maximum tourist arrival was 86,900,000 and a minimum of 49,000 tourists. INFRA has a mean of 9.19 with 1.75 standard deviations. LAB has a mean figure of 266,00,000, a maximum of 505,000,000 and a minimum of 80,914. The mean GFCF is 5.350 trillion, maximum at 3230 trillion and a minimum at 316,000,000. All of the governance indicators (six) have a mean of 0.5142431. POL has the highest individual mean at 0.2484314, while GOV is the most attained index at 2.44 and POL has the minimum score of −2.15 among the 51 countries.

Results from the correlation matrix in Table 4 show that LAB and GFCF have a negative association with the dependent variable LGDPC, which is against theoretical expectation. The rest of

Table 3. Descriptive statistics.

Variable	Obs.	Mean	Standard deviation	Min	Max	Skewness	Kurtosis
RGDPC	816	22775.43	20316.54	382.5216	77684.06	0.56	2.07
TOUR	816	1.34×10^{7}	1.71×10^{7}	49000	8.69×10^{7}	2.17	7.92
INFRA	816	9.19×10^{-11}	1.751017	−3.776496	3.64045	−0.21	2.16
TRO	816	93.97417	67.68246	20.68561	442.62	2.89	12.95
LAB	816	2.66×10^{7}	6.83×10^{7}	80914	5.05×10^{8}	5.30	33.37
GFCF	816	5.35×10^{13}	3.12×10^{14}	$3.16e \times 10^{8}$	3.23×10^{15}	7.50	62.31
ROL	816	0.5709191	0.9263919	−1.28	2.04	−0.004	1.66
GOV	816	0.6741201	0.8872431	−1.05	2.44	−0.02	1.73
COC	816	0.5301471	1.047362	−1.29	2.39	0.20	1.64
RQI	816	0.6761029	0.8008526	−0.98	2.26	0.02	1.76
VOA	816	0.3858088	0.9005528	−1.91	1.74	−0.41	2.06
POL	816	0.2484314	0.8207496	−2.15	1.62	−0.70	2.75
IQI	816	0.5142431	0.8273019	−1.031667	1.861667	0.01	1.63

Note: RGDPC: real gross domestic product per capita; TOUR: tourist arrival; INFRA: infrastructure; TRO: trade openness; GFCF: gross fixed capita formation; ROL: rule of law; GOV: government effectiveness; COC: control of corruption; RQI: regulatory quality; VOA: voice and accountability index; POL: political stability; IQI: institutional quality index.

Table 4. Pairwise correlation.

	RGDPC	TOUR	INFRA	TRO	LAB	GFCF	ROL	GOV	COC	RQI	VOA	POL
RGDPC	1.00											
TOUR	0.48***	1.00										
INFRA	0.38***	0.17***	1.00									
TRO	0.21***	0.01	0.02	1.00								
LAB	0.11***	0.65***	0.20***	−0.43***	1.00							
GFCF	−0.06**	0.33***	0.16***	−0.34***	0.75***	1.00						
ROL	0.34***	0.23***	0.44***	0.07*	0.14***	0.14***	1.00					
GOV	0.53***	0.22***	0.49***	0.15***	0.06	0.02	0.79***	1.00				
COC	0.37***	−0.02	0.36***	0.06	0.10**	0.06***	0.78***	0.71***	1.00			
RQI	0.41***	0.27***	0.45***	0.06*	0.19***	0.12***	0.80***	0.81***	0.63***	1.00		
VOA	0.38***	0.27***	0.18***	−0.09**	0.17***	−0.03	0.54***	0.61***	0.40***	0.53***	1.00	
POL	0.40***	0.18***	0.02	0.17***	0.02	−0.01	0.38***	0.40***	0.39***	0.427***	0.29***	1.00

Note: RGDPC: real gross domestic product per capita; TOUR: tourist arrival; INFRA: infrastructure; TRO: trade openness; GFCF: gross fixed capita formation; ROL: rule of law; GOV: government effectiveness; COC: control of corruption; RQI: regulatory quality; VOA: voice and accountability index; POL: political stability; LAB: labour force.
***, ** and * indicate 1%, 5%, and 10% significance levels, respectively.

the variables (TOUR, TRO, ROL, GOV, COC, RQI, VOA, POL and INFRA) have a positive association with the dependent variable in line with expectations. This positive connection is also shown in Figure 1 for institutional quality. The variables with a high correlation demonstrate a high-strength relationship with economic growth. Although few variables exhibit a high correlation with themselves, a combined index (i.e. IQI) was generated, which was also used in the main regression model and represents our main finding used in the interaction/moderation term (i.e. IQI*TOUR).

As given in Table 5, the Im–Pesaran–Shin, Levin–Lin–Chu and Harris–Tzavalis unit-root tests revealed that all variables are stationary at first difference. However, in the Levin–Lin–Chu test, all

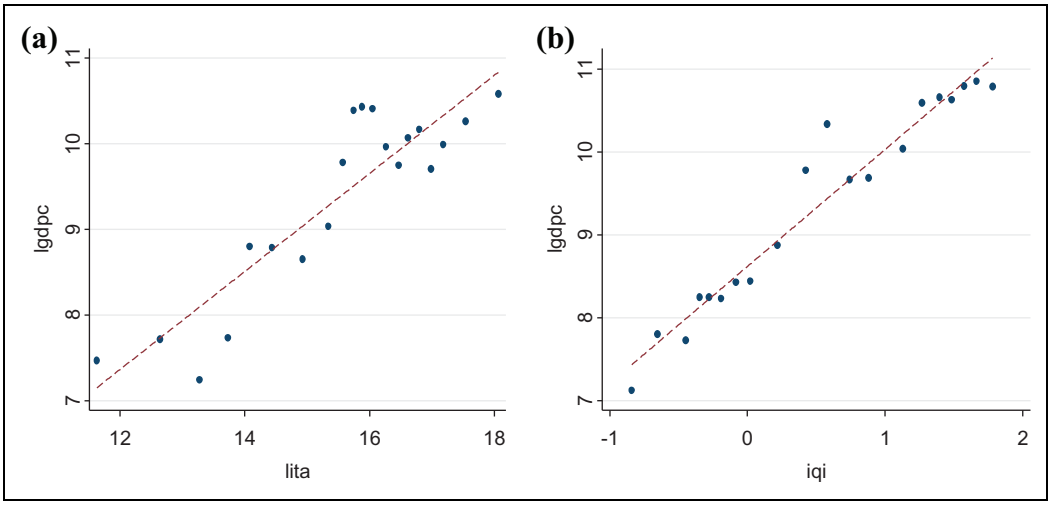

Figure 1. (a, b) Graphical analysis (scatter plot).

Table 5. Unit root test results.

	Im–Pesaran–Shin unit root test		Levin–Lin–Chu unit root test		Harris–Tzavalis unit-root test	
	Level	First difference	Level	First difference	Level	First difference
RGDPC	0.74	−8.29***	−5.59***	−9.95***	3.74	−17.44***
TOUR	9.44	−10.83***	−3.67***	−7.78***	4.48	−29.26***
INFRA	5.65	−8.38***	−4.23***	−6.00***	0.95	0.14***
TRO	−1.67**	−12.27***	−6.46***	−15.06***	−2.95***	−31.60***
LAB	3.76	−5.09***	−7.69***	−6.40***	5.02	−7.80***
GFCF	−0.05	−8.90***	−7.28***	−10.86***	1.23	−22.76***
ROL	−1.51*	−13.07***	−2.62***	−9.95***	−0.11	−34.90***
GOV	−1.68**	−13.58***	−3.90***	−18.77***	−5.12***	−40.05***
COC	−2.51***	−12.78***	−4.10***	−12.65***	−2.57***	−34.33***
RQI	−1.52*	−13.82***	−2.78***	−10.69***	−1.82**	−36.80***
VOA	−3.37***	−11.34***	−7.41***	−19.47***	−4.75***	−26.64***
POL	−4.43***	−13.35***	−5.64***	−13.15***	−4.49***	−33.22***
IQI	−2.48***	−13.05***	−3.91***	−12.30***	−0.93	−33.70***

Note: RGDPC: real gross domestic product per capita; TOUR: tourist arrival; INFRA: infrastructure; TRO: trade openness; GFCF: gross fixed capita formation; ROL: rule of law; GOV: government effectiveness; COC: control of corruption; RQI: regulatory quality; VOA: voice and accountability index; POL: political stability; IQI: institutional quality index.
***, ** and * indicate 1%, 5%, and 10% significance levels, respectively.

variables were stationary at level, while 8 of 12 variables are stationary at the level in the Im–Pesaran–Shin, and in the Harris–Tzavalis unit-root test, five variables are found to be stationary at level. Hence, it is safe to state that all variables are stationary at first difference.

Table 6. Pooled OLS, fixed effects, random effects, and the GMM results.

Variables	OLS	Fixed effect	Random effects	D-GMM
–	–	–	–	0.560* (0.0453)
–	0.411* (0.0211)	0.172* (0.0120)	0.202* (0.0144)	0.0681* (0.00848)
–	0.312* (0.0189)	0.0715* (0.00777)	0.0849* (0.00879)	0.118* (0.0164)
–	0.145* (0.0538)	0.0955* (0.0154)	0.0610** (0.0307)	0.0577** (0.0251)
–	−0.305* (0.0219)	0.284* (0.0155)	−0.350* (0.0331)	−0.0163* (0.00528)
–	0.0429* (0.00898)	0.291* (0.0148)	0.178* (0.0157)	0.0402* (0.00618)
–	0.244* (0.0634)	0.0509** (0.0213)	0.0851* (0.0260)	0.0159* (0.00586)
–	0.143*** (0.0810)	0.0462** (0.0226)	0.0674* (0.0154)	0.0216 (0.0144)
–	−0.255* (0.0363)	−0.172* (0.0226)	−0.173* (0.0273)	−0.0901* (0.0233)
–	0.0391 (0.0752)	0.0171 (0.0264)	0.0166 (0.0295)	0.0130 (0.00819)
–	0.107** (0.0506)	0.0311 (0.0208)	0.0853* (0.0248)	0.0455*** (0.0242)
–	0.0652*** (0.0355)	0.0256** (0.0115)	0.0285** (0.0141)	0.0498** (0.0220)
Constant	7.352* (0.316)	7.330* (0.498)	7.597* (0.459)	−3.655* (0.787)
Observations	816	816	816	714
R^2	0.915	0.738	0.607	0.686
Hausman test	–	284*	–	–
F-statistics	488.623*	192.60*	–	60.34*
AR (1) test *p* value	–	–	–	0.255
AR (2) test *p* value	–	–	–	0.587
Hansen test	–	–	–	1.14
Number of instruments	–	–	–	24
GMM instrument lag	–	–	–	1
Cross-sections	51	51	51	51

Note: OLS: ordinary least square; GMM: generalised method of moment; D-GMM: dynamic generalised method of moment. Standard errors in parentheses.
*$p < 0.01$.
**$p < 0.05$.
***$p < 0.1$.

Dynamic panel-data estimation, difference in GMM

The main results for this study involve two models: a baseline model and a secondary model, each estimated by the dynamic ordinary least square (OLS) and GMM estimators. Table 6 contains the results for the baseline and secondary models estimated by pooled OLS, fixed effects, random effects (REs) and dynamic GMM (D-GMM) estimators. For the GMM instrument, one lag was used. The specification test results of the AR (2) reveal that the GMM estimates do not suffer from second-order serial correlation, and the Hansen test results show that the instruments used are not over-identified.

Overall, the results confirm the TLGH in the 51 countries and that tourism has the highest impact on economic growth in these countries. The positive coefficient of TOUR induces that a 1% increase in tourism will lead to a rise in economic growth of 0.41%, 0.17%, 0.20% and 0.06% in the countries of focus according to the pooled OLS, fixed effects, REs and GMM estimators, respectively. This finding supports that of previous studies, such as Sokhanvar (2019) for Spain and Bulgaria, and Chen and Chiou-Wei (2009) for Taiwan.

Overall, the economic indicators suggest a positive impact on economic growth at a 5% level of significance. TRO has a positive and significant coefficient according to the REs and D-GMM estimators, meaning that TRO induces economic growth among the countries of focus. This further reveals that as countries increase their level of openness to the global economy, they experience expansion in productive activities in a bid to meet other countries' demand for goods and services. Similarly, local companies acquire more productive technologies in the process, which further grows the economy.

Interestingly, the LAB has both a negative and positive coefficient, implying a negative and positive effect on RGDPC in the various countries investigated. While it appears to have a negative coefficient on the OLS estimator, it has a positive and significant coefficient on the fixed effect estimator. A negative coefficient of the LAB which is against a priori expectation means that an increase in the LAB will bring about a contraction in growth. On the other hand, a positive relationship between the LAB and growth as shown by the FE means that an increase in the working population induces economic growth in these countries by ensuring a steady and sufficient supply of manpower to maintain pace with increased production. Consequently, skilled labour enhances economic productivity, leading to an increase in economic output.

Another economic indicator, GFCF, turns out to have a positive impact on growth. As expected, the continuous accumulation of fixed assets increases the production capacity of an economy, leading to a rise in economic growth. As per the results displayed in Table 6, a 1% increase in the stock of capital will bring about 0.04%, 0.29%, 0.17% and 0.04% rise in GDP per capita, depending on the respective estimators.

The governance indicators are statistically significant at the 1%, 5% and 10% levels of significance. For instance, we find that ROL has a positive effect on growth implying that the ability of the authorities to implement social and economic laws without favouritism to individuals or groups will bring about a favourable atmosphere for the growth of economic activities in the countries studied. Particularly, a 1% rise in the ROL index will induce a 0.24%, 0.04%, 0.08% and 0.02% increase in economic growth, as shown by the respective estimators.

GOV also has a positive relation to economic growth, which shows that the ability of a government to maintain a high standard of public services can go a long way towards fostering growth in economic activities in the 51 countries. Consequently, COC has a negative impact on per capita income (GDPC) in the studied countries. While this outcome is not as expected, it is in line with the "money efficiency grease" hypothesis, which submits that bribery – a form of corruption – can be used to fasten regulatory processes and correct court sentences (Bhardan, 1997; Kaufman and Wei, 2000, which may often work for the good of firms, ensuring uninterrupted productivity. This result further suggests that the level of corruption control in the 51 countries contributes to boosting their economic growth.

RQI has a positive but insignificant impact on economic growth. This signifies that if the governments of the 51 countries implement laws and regulations that promote private sector activities, it will lead to a rise in the overall economic activity in the countries, which will translate to an increase in economic opportunities for the citizens of a country, thereby creating wealth for the society.

Similarly, VOA has a positive impact on economic growth. This entails that economic growth thrives in a country to the extent by which public opinion and association are tolerated by the authorities. While a high ranking in the VOA index increase the chances of sustained economic growth in the 51 countries, a low ranking will decrease economic growth.

There is a positive and significant relationship between POL and economic growth. A possible explanation for this result is that investors are attracted to countries with lower violence and less frequent changes in government tenures and tend to avoid countries perceived as unstable. Similarly,

Table 7. Result of the interaction term between tourism and institutional variable.

Variables	Pooled OLS	Fixed effects	Random effects	D-GMM
	–	–	–	0.843* (0.0650)
–	0.417* (0.0188)	0.173* (0.0118)	0.201* (0.0144)	0.270* (0.0117)
INFRA	0.329* (0.0187)	0.0710* (0.00762)	0.0825* (0.00883)	0.0266** (0.0149)
–	0.0783* (0.00913)	0.287* (0.0152)	0.194* (0.0160)	0.0438* (0.0136)
–	−0.274* (0.0187)	−0.509* (0.0356)	−0.347* (0.0329)	−0.118** (0.0670)
–	0.0387* (0.00809)	0.298* (0.0148)	0.175* (0.0159)	0.0624*** (0.0243)
–	0.255*** (0.106)	0.159* (0.0280)	0.106* (0.0229)	0.331* (0.0887)
–	−0.0889* (0.0137)	−0.0321* (0.00985)	−0.0321* (0.00985)	−0.0153* (0.00525)
Constant	6.701* (0.268)	7.449* (0.488)	7.592* (0.451)	0.0763 (0.131)
Observations	816	816	816	765
R^2	0.884	0.735	–	–
Hausman test		305.53*	–	–
F-statistics	1260.24*	489.90*	–	73.81*
AR (1) test *p* value	–	–	–	0.205
AR (2) test *p* value	–	–	–	0.453
Hansen Test	–	–	–	2.14
Number of instruments	–	–	–	24
GMM instrument lag	–	–	–	1
Cross-sections	–	51	51	51

Note: OLS: ordinary least square; GMM: generalised method of moment; D-GMM: dynamic generalised method of moment. Standard errors in parentheses.
*$p < 0.01$.
**$p < 0.1$.
***$p < 0.05$.

uncertainty in the future will disrupt the accumulation of human and physical capital, which ultimately slows down economic growth (Uddin et al., 2017). The high R^2 values in Table 6 show that the variation in economic growth is well explained by the economic and governance indicators in the model.

In Table 7, results from the second model, which features the interaction term between tourism and institutional quality, are presented. As can be seen (Table 7, columns 1–4), TOUR maintains a positive relationship with economic growth in the model, confirming the TLGH in the model presented in Table 6. However, the introduction of the institutional quality interactive term reverses the link between tourism and economic growth from a positive to an inverse relationship, which suggests that a rise in tourist arrivals in the 51 countries will slow down economic growth due to the state of institutional quality. A possible explanation to this is weak political and regulatory institutions, which allow for the practice of corruption in the tourist industry, and possible embezzlement of tourism-generated revenue by people in leadership in these countries; the higher the level of tourist patronage, the more tourist revenue is misappropriated, and hence not used for developing economic infrastructure, or any other purpose capable of boosting economic growth.

As a stand-alone variable in the model, IQI has a positive effect on economic growth. It is capable of over 0.33% (according to GMM estimates) explanation of changes in economic growth in the panel, signifying the important roles institutions play in the economy. Furthermore, the quality of institutions, the system of economic reward, political freedom and law and order affect

the accumulation of human and fixed capital, which directly influence economic growth (Hall and Jones, 1999).

Similarly, the coefficient for TRO and GFCF remains positive and significant, implying that TRO, as well as capital formation, plays important roles in determining economic growth in the 51 countries. LAB has a negative effect on growth, as reported earlier in Table 6. The high R^2 values in Table 7 show that the variation in economic growth is well explained by the economic and governance indicators in the model. The diagnostic test of GMM estimates on AR (2) demonstrates that there is no second-order serial correlation problem. The findings from the Hansen test also confirm that the instruments used are not over-identified.

High earners and tourism-dependent countries

In Table 8, the panel is sub-grouped into high-earning and tourism-dependent countries to reveal whether or not economic and governance indicators have significantly different impacts on growth in the two groups based on an estimation of the baseline model and the secondary model. Starting with the baseline model in Table 8, it appears that both economic and governance variables have both similar and differing impacts on economic growth in high-earning countries and tourism-dependent countries.

For instance, tourism has a positive effect on growth in both high-earning and tourism-dependent countries, implying the importance of tourist patronage to the economic growth of both country groups. This finding is in line with Perles-Ribes et al. (2017) for Spain (a high-earning country) and Schubert (2011) for Antigua and Barbuda (a small country dependent on tourism). Among the economic variables, TRO boosts economic growth in both high-earning and tourism-dependent countries. This outcome also confirms that tourism and openness are strongly correlated and that countries with a high degree of TRO also experience high tourism demand, as confirmed by Chaisumpunsakul and Pholphirul (2017) for Thailand. LAB has a negative impact on economic growth in both country groups, as is the case with the panel model. This outcome is contrary to economic theory and implies that the growth in the LAB of both high-earning and tourism-dependent countries will lead to a reduction in economic activities.

Reporting the impact of governance indices on growth in the 51 countries, it is seen that ROL has different impacts across the two group of countries, while an increase in ROL appears to shrink growth in tourism-dependent countries, it leads to an increase in growth in high-earning countries. The inverse relationship between ROL and growth in tourism-dependent countries suggests that overall economic activities thrive when social and economic rules – including contract enforcements – are relaxed and that the presence of poor law enforcement systems paves the way for economic productivity. On the other hand, the positive link between law enforcement and growth could be explained by the knowledge that developed and/or high-earning countries have a strong reward system for law and order, and low tolerance for breaches of the law.

On the other hand, the COC index is inversely related to economic growth in both high-earning and tourism-dependent countries, which signifies that a higher COC index showing high levels of corruption control leads to a contraction in economic growth, while a lower control over corruption encourages a rise in economic growth. This points again to the claim that corruption could encourage growth in economic activity in many ways, such as allowing efficient firms to scale through bureaucratic hurdles, thereby enhancing economic productivity (Lui, 1985). Consequently, empirical evidence by Rock and Bonnet (2004) finds that corruption boosts economic growth in South-East Asian countries.

Table 8. Result tourism and economic growth from low earners and high earner economies.

	Low earner economies					High earner economies				
	Pooled OLS	Fixed effect	Random effect	D-GMM (I)	D-GMM (II)	Pooled OLS	Fixed effect	Random effect	D-GMM (I)	D-GMM (II)
Variables	*RGDPC*	*RGDPC*	*RGDPC*	*RGDPC*	*RGDPC*	*RGDPC*	*RGDPC*	*RGDPC*	*RGDPC*	*RGDPC*
LRGDPC				0.783* (0.163)	0.718* (0.195)				0.818* (0.0522)	0.714* (0.200)
TOUR	0.373* (0.0346)	0.164* (0.0158)	0.160* (0.0174)	0.519* (0.146)	0.165* (0.0184)	0.270* (0.0261)	0.185* (0.0202)	0.220* (0.0223)	0.325* (0.0195)	0.392* (0.131)
INFRA	0.339* (0.0296)	0.0879* (0.0167)	0.135* (0.0160)	0.0319** (0.0132)	0.0442* (0.0149)	0.228* (0.0193)	0.0712* (0.00968)	0.0921* (0.0105)	0.0458** (0.0206)	0.0487* (0.0157)
TRO	0.0688*** (0.0370)	0.174* (0.025)	0.173* (0.0532)	0.298 (0.345)	0.0270** (0.0104)	0.349* (0.0272)	0.164* (0.0239)	0.180* (0.0304)	0.328*** (0.198)	0.176*** (0.0935)
LAB	−0.506* (0.0382)	−0.358* (0.0622)	−0.440* (0.0632)	−0.137** (0.0556)	−0.188** (0.0711)	−0.277* (0.0207)	−0.589* (0.0446)	−0.559* (0.0398)	−0.120* (0.0212)	−0.0631 (0.0425)
GFCF	0.0838* (0.0118)	0.213* (0.0195)	0.181* (0.0198)	0.0449** (0.0192)	0.0557* (0.0106)	0.0230** (0.00926)	0.375* (0.0220)	0.214* (0.0201)	0.0780* (0.0106)	0.0592** (0.0224)
ROL	−0.0510 (0.0370)	−0.0642*** 0.0328)	−0.098* (0.0310)	−0.181 (0.432)		0.181** (0.0827)	0.0683*** (0.0414)	0.0330 (0.0471)	0.242 (0.541)	
GOV	0.0598 (0.0454)	0.0107 (0.00908)	0.0170 (0.0339)	0.317 (0.356)		0.156*** (0.0922)	0.0645* (0.0180)	0.0669** (0.0322)	0.0151** (0.00704)	
COC	−0.152** (0.0747)	−0.0828** (0.0335)	−0.189* (0.0453)	−0.593*** (0.351)		−0.154*** (0.0803)	−0.232* (0.0311)	−0.242* (0.0349)	−0.357** (0.177)	
RQI	0.0632*** (0.0357)	0.0956* (0.0290)	0.0942* (0.0328)	0.669 (0.431)		0.302* (0.0717)	0.0113*** (0.00674)	0.0701** (0.0306)	0.0216*** (0.0122)	
VOA	0.0455 (0.0349)	0.112** (0.0474)	0.133* (0.0397)	0.0230*** (0.0120)		0.177*** (0.0906)	0.0686** (0.0311)	0.0731** (0.0353)	0.0255*** (0.0135)	
POL	0.0475** (0.0188)	0.0241*** (0.0130)	0.0407** (0.0171)	0.173* (0.0532)		0.251* (0.0382)	0.0182 (0.0168)	0.0652*** (0.0342)	0.0103 (0.0137)	
IQI					0.0473*** (0.0245)					0.0655* (0.0199)
*IQI * TOUR*					−0.098* (0.0310)					−0.024* (0.00748)
Constant	9.978* (0.407)	5.621* (0.790)	8.612* (0.625)	12.94* (4.567)	3.359** (1.430)	10.81* (0.490)	7.479* (0.678)	3.264* (0.712)	7.542* (2.588)	0.184*** (0.0963)
Observations	288	288	288	288	288	528	528	528	528	528
R^2	0.800	0.83	0.82			0.899	0.832	0.802		
Hausman test		69.22*					149.95*			
F-statistics	294.03*	303.89*		41.35*	54.75*	418.30*	248.25*		72.42*	80.12*
AR (1) test *p* value				0.323	0.141				0.215	0.368
AR (2) test *p* value				0.689	0.577				0.574	0.691
Hansen test				3.14	2.30				3.87	2.68
Number of instruments				13	13				14	14
GMM instrument lag				1	1				1	1
Number of countries	18	18	18	18	18	33	33	33	33	33

Note: OLS: ordinary least square; RGDPC: real gross domestic product per capita; TOUR: tourist arrival; INFRA: infrastructure; TRO: trade openness; GFCF: gross fixed capita formation; ROL: rule of law; GOV: government effectiveness; COC: control of corruption; RQI: regulatory quality; VOA: voice and accountability index; POL: political stability; IQI: institutional quality index. Standard errors in parentheses; D-GMM: dynamic generalised method of moment.

*$p < 0.01$.

**$p < 0.05$.

***$p < 0.1$.

Furthermore, GOV matters to economic growth in high-earning counties only, as it has a statistically non-significant coefficient in tourism-dependent countries. This outcome signifies that GOV in ensuring the efficiency of public services is taken into consideration for growth in high-earning countries. Consequently, in column 7 of Table 8, the importance of GOV to growth is shown by its ability to explain a 0.15% change in per capita income (according to the pooled OLS estimator). However, this is not obtainable in tourism-dependent countries and suggests that the authorities in these countries do not pay significant attention to ensuring that efficient services are available to the public in a way that will influence economic activities.

Other governance variables such as RQI, VOA and POL have a positive effect on growth in both high-earning and tourism-dependent countries, which highlight their importance in ensuring a thriving economy.

Results from the second model (Table 8, columns 6 and 11) show the influence of institutional quality on tourism in high-earning and tourism-dependent countries. The findings confirm that the TLGH holds in the two country groups, indicating the important contribution of the tourism industry to economic growth in both high-earning and tourism-dependent countries. This is in alignment with the findings of previous studies (Dritsakis, 2012; Proença and Soukiazis, 2008). The introduction of the institutional quality interactive term changes the direction of the impact of tourism on economic growth from positive to negative in both country groups. As reported earlier, this outcome points to weak institutions that may allow for the embezzlement or poor use of tourism revenue, which ultimately affects economic growth. However, tourism-dependent countries suffer more from the influence of poor governance on tourism. For instance, a 1% rise in tourist arrivals will bring about a 0.09% contraction in growth in tourism-dependent countries, yet only a 0.02% contraction in growth in high-earning countries. This varying impact infers that the governance system in tourism-dependent countries is weaker than in high-earning countries.

Consequently, IQI has a positive effect on growth among the two country groups, as is the case in the first model (Table 8, columns 2–5), which further reiterates the importance of effective institutions to an economy. TRO induces growth in both tourism-dependent countries and high-earning countries. On the other hand, the impact of the LAB remains negative in both groups of countries. The diagnostic test of GMM estimates on AR (2) demonstrates that there is no second-order serial correlation problem in either tourism-dependent or high-earning countries. Consequently, the findings from the Hansen test also confirm that the instruments used are not over-identified for either group of countries.

Results of Dumitrescu–Hurlin panel causality tests

Dumitrescu–Hurlin (2012) developed the Dumitrescu–Hurlin panel causality test, which is applied to check the robustness of the earlier findings. Unbiased results can be obtained using this test in cases of an unbalanced panel and heterogeneous data. The Dumitrescu–Hurlin causality test's null hypothesis states that all independent variables included in the model do not Granger-cause economic growth. Table 9 provides the results of Dumitrescu–Hurlin causality test. The null hypothesis is accepted for variables GOV and RQI, which indicate that both variables do not Granger-cause economic growth. The null hypothesis is rejected, as indicated by the significant value of *Z*-stat and *W*-stat for all other variables. Hence, accepting the alternative hypothesis which states that 10 variables (for instance, *TOUR, INFRA, TRO, LAB, GFCF, ROL, GOV, COC, RQI, VOA, POL, IQI*) included in the model does Granger-cause economic growth. The causality between tourism and economic growth has also been demonstrated in the literature (Husein and Kara, 2011; Katircioğlu,

Table 9. Dumitrescu–Hurlin panel causality test.

Hypothesis	*W*-stat	*Z*-stat	Prob.	Result	Conclusion
TOUR→LRGDPC	2.7187	8.6789	0.0000	Yes	TOUR causes LRGDPC
LRGDPC→TOUR	2.6744	8.4555	0.0000	Yes	LRGDPC causes TOUR
INFRA→LRGDPC	2.3559	6.8472	0.0000	Yes	INFRA causes LRGDPC
LRGDPC→INFRA	2.5189	7.6700	0.0000	Yes	LRGDPC causes INFRA
TRO→LRGDPC	2.6759	8.4624	0.0000	Yes	TRO causes LRGDPC
LGRDPC→TRO	2.4063	7.1015	0.0000	Yes	LRGDPC causes TRO
LAB→LRGDPC	2.5287	7.7197	0.0000	Yes	LAB causes LRGDPC
LRGDPC→LAB	19.7956	13.3504	0.0000	Yes	LRGDPC causes LAB
GFCF→LRGDPC	1.6154	3.1078	0.0019	Yes	GFCF causes LRGDPC
LRGDPC→GFCF	2.1541	5.8278	0.0000	Yes	LRGDPC causes GFCF
ROL→LRGDPC	1.6576	3.3207	0.0009	Yes	ROL causes LRGDPC
LGRDPC→ROL	3.3006	11.6172	0.0000	Yes	LRGDPC causes ROL
GOV→LRGDPC	0.9657	−0.1733	0.8624	No	GOV causes LRGDPC
LRGDPC→GOV	3.2782	11.5045	0.0000	Yes	LRGDPC causes GOV
COC→LRGDPC	2.3999	7.0690	0.0000	Yes	COC causes LRGDPC
LRGDPC→COC	3.3758	11.9974	0.0000	Yes	LRGDPC causes COC
RQI→LRGDPC	1.1666	0.8412	0.4003	No	RQI causes LRGDPC
LGRDPC→RQI	3.1786	11.0013	0.0000	Yes	LRGDPC causes RQI
VOA→LRGDPC	2.3229	6.6802	0.0000	Yes	VOA causes LRGDPC
LRGDPC→VOA	2.1742	5.9296	0.0000	Yes	LRGDPC causes VOA
POL→LRGDPC	2.2752	6.4392	0.0000	Yes	POL causes LRGDPC
LRGDPC→POL	3.8088	14.1338	0.0000	Yes	LRGDPC causes POL
IQI→LRGDPC	2.1776	5.9464	0.0000	Yes	IQI causes LRGDPC
LRGDPC→IQI	3.0872	10.5396	0.0000	Yes	LRGDPC causes IQI

Note: LRGDPC: log real gross domestic product per capita; TOUR: tourist arrival; INFRA: infrastructure; TRO: trade openness; GFCF: gross fixed capita formation; ROL: rule of law; GOV: government effectiveness; COC: control of corruption; RQI: regulatory quality; VOA: voice and accountability index; POL: political stability; LAB: labour force.

2010). Thus, the results from Table 9 show that a bidirectional causality exists between TOUR, INFRA and IQI and economic growth, while GOV and RQI show unidirectional causality. All control variables also indicate bidirectional causality with economic growth.

Conclusion and policy implications

This study sets out to investigate the differences in the impact of tourism, economic and governance indices on economic growth in tourism-dependent and high-earning countries. Specifically, it sought to identify the effect of governance indices on tourism-led growth. Pooled OLS, fixed effects, REs and system GMM estimators were used to analyse the data in the study. The robustness of the results is confirmed by applying a Dumitrescu–Hurlin panel causality test. The results confirm the presence of the TLGH among the two country groups. While infrastructure also contributes to economic growth, its impact is slightly higher in top earners than in tourism-dependent economies. Furthermore, the influence of governance on tourism through an interaction term between institutional quality and tourist arrivals was found to reverse the impact of tourism on growth from positive to negative in both high-earning and tourism-dependent countries. The results suggest that weak

institutions in both country groups allow corrupt practices, which divert the positive impact that tourism should have on economic growth.

From a policy standpoint, it is greatly desirable that more effective measures be employed to curb corrupt practices, especially in the tourist industry, so as to prevent the diversion of tourism revenue for private gain. Findings show that in the absence of poor governance, tourism is a major contributor to economic growth in both the tourism-dependent and high-earning countries. As such, strengthening institutions remains of great importance in the 51 countries studied. More specifically, the takeaway from our study of non-governmental organisations (NGOs) and destination marketing organisations/agencies (DMOs) is that it can be gleaned from the empirical findings we present that tourism-dependent economies and high earners from tourism are pertinent to sustainable economic growth. Thus, NGOs, DMOs and other stakeholders in the tourism industry can form strategies and provide specific promotion for certain destinations in light of institutional quality.

There is also a need to reinforce the trade-off between tourism development and environmental quality. This is imperative, as a great deal of environmental damage arises when tourists are allowed to explore destinations. Even if they act responsibly, some of their activities may have environmental implications. This suggests that poor or weak institution indices (e.g. corruption, ROL) deteriorate economic growth in the context of the TLGH, while on the other hand, good and robust institutions and observance of the ROL will not only foster economic growth but will also translate into several other sub-sectors, such as agriculture, manufacturing and tourism/service, among others. This position is resonated in the assertion of Acemoglu and Robinson (2006) and Acemoglu (2015) that the quality of an institution is crucial to the wealth of a nation. Furthermore, such destinations can construct good institutional indices for more utilities from tourism. The limitation encountered in this study is data available to incorporate into the model construction, while direction for further study by other researchers is the need to more deeply research the theme by accounting for other macroeconomic variables such as population. The need to also investigate asymmetry is relevant to the TLGH, given that most macroeconomic variables might have non-linear trend characteristics. Future researchers may study the impact of the TLGH on different sectors, for instance, the agriculture, manufacturing and service sectors.

Author contributions

FFA was responsible for the conceptual construction of the study and also handled the literature section while NE managed the data gathering, preliminary analysis and simulation alongside FVB who proceeded to interpretation of the simulated results, and finally, FFA was responsible for proofreading and manuscript editing.

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Supplemental material

Supplemental material for this article is available online.

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