

# The Impact of Domestic Tourism Development on Economic Growth—An Empirical Study Based on Cross-Country Data

Haofu Yang \*

School of Business, Macau University of Science and Technology, Macau S.A.R, China

\* Corresponding Author Email: yhf0621@126.com

**Abstract.** Domestic tourism is the foundation of tourism development in most countries, the main component of the global tourism market, and an important part of the global economy. Based on a systematic review of relevant domestic and international literature, this paper uses balanced panel data from 121 countries during 1996–2015 and applies static and dynamic panel models to empirically study the impact of domestic tourism development on economic growth. The results show that the level of domestic tourism development varies across countries; the Tourism-Led Growth Hypothesis applies to domestic tourism development globally, and according to dynamic model estimates, a 1% increase in domestic tourism development level raises economic growth rate by 0.00254%. Meanwhile, factors such as physical capital, government size, innovation capacity, human capital, industrial structure, passenger transport capacity, and urbanization level also have certain impacts on economic growth and should not be ignored.

**Keywords:** Domestic tourism development; economic growth; balanced panel data.

## 1. Introduction

Consumption, especially household consumption, is an important factor driving a country's economic growth. Domestic tourism, as an important part of domestic consumption, plays a significant role in global and national tourism development. From the perspective of individual countries, domestic tourism is the important foundation for most major tourism countries in the world. According to the ranking of total tourism revenue in various countries (the sum of domestic tourism revenue and inbound tourism revenue), the top twenty countries can be classified into three types based on the proportion of inbound tourism revenue in a country's total tourism revenue: countries driven by domestic tourism, where the proportion of inbound tourism revenue is between 0% and 30% (inclusive); countries driven by both domestic and inbound tourism, where the proportion of inbound tourism revenue is between 30% and 70% (inclusive); and countries driven by inbound tourism, where the proportion of inbound tourism revenue is above 70%. Among the 20 countries mentioned above, the vast majority, including China, Brazil, Germany, Mexico, India, the United Kingdom, the United States, Canada, Italy, Australia, South Korea, Japan, the Philippines, Russia, and France, belong to the category of countries driven by domestic tourism. Based on these facts, promoting economic growth and improving the overall level of the national economy through the development of domestic tourism has become a basic logical judgment and a common choice for countries.

## 2. Literature Review

The relationship between tourism development and economic growth has been a focal topic in the field of tourism economics research. Overall, relevant studies have formed four different viewpoints: first, some believe that tourism development can promote economic growth, forming the Tourism-Led Growth Hypothesis (TLGH); second, some believe that tourism development and economic growth cause and promote each other, that is, the Reciprocal Hypothesis (RH); third, some believe that tourism development benefits from economic growth, forming the Growth-Led Tourism Hypothesis (GLTH); and fourth, some believe that tourism development and economic growth have no relationship at all, i.e., the Irrelevant Hypothesis (IH). Among these, the literature supporting the first conclusion is the most numerous [1, 2].

Tourism includes three major parts: domestic tourism, outbound tourism, and inbound tourism. Regarding the relationship between domestic tourism and economic growth, studies have confirmed that the development of domestic tourism has a positive effect on economic growth, thereby validating the reasonableness of the TLGH from the perspective of domestic tourism [3-5]. There are many other similar studies. For example, some studied the role of Spain's domestic tourism in long-term economic equilibrium through cointegration and causality analysis and confirmed the TLGH [6]; some using the Theil index decomposition method to compare the spatial distribution of domestic tourism, international tourism, and overall economic development across China's three major economic regions from 1997 to 2010, concluded that domestic tourism has a more significant effect on overall economic development than international tourism [7]; Other studies examining domestic tourism revenue in the Mediterranean region concluded that domestic tourism is a determining factor for economic growth in the Mediterranean region [8].

### 3. Research Design

#### 3.1. Research Approach

This article focuses on the TLGH and is based on the Cobb-Douglas production function, selecting indicators and proxy variables for various factors affecting economic growth. It applies to a range of cutting-edge econometric methods, including dynamic and static panel models, using cross-country panel data from 1996 to 2015, to explore the relationship between domestic tourism development and economic growth in 121 countries worldwide. The aim is to answer two core questions: first, regarding domestic tourism, does TLGH hold globally? Second, besides domestic tourism development, what other important factors affect economic growth and should be given attention?

#### 3.2. Model Setting

This article takes the new economic growth theory as the basic framework, draws on the research ideas of Fayissa et al. [9], and refers to the model construction approach of Shan et al. [10], to conduct an empirical study on the relationship between domestic tourism development and economic growth. It is assumed that the production function is in the traditional Cobb-Douglas form:

$$Y_{it} = A K_{it}^{\alpha} L_{it}^{\beta} H_{it}^{\gamma} \quad (1)$$

Here,  $Y_{it}$  represents the total output of country  $i$  in year  $t$ ,  $K$ ,  $L$ ,  $H$  and  $\alpha$ ,  $\beta$ ,  $\gamma$  represent the inputs of physical capital, labor, and human capital and their output elasticities, respectively.  $A$  represents the utility function of Hicks-neutral technological progress. Assuming constant returns to scale, that is,  $\alpha + \beta + \gamma = 1$ , both sides of equation (1) are divided by  $L_{it}$ .

$$Y_{it}/L_{it} = A_{it} (K_{it}/L_{it})^{\alpha} (H_{it}/L_{it})^{\gamma} \quad (2)$$

$A$ , as an efficiency parameter, is affected by a combination of various factors, including the core explanatory variable studied in this paper-the level of domestic tourism development (DTOUR), here we assume that  $A = \text{DTOUR}^{\psi}_{it} * X^{\Phi}_{it}$ . Substituting this into equation (2) and taking the logarithm on both sides gives:

$$\ln(Y_{it}/L_{it}) = \alpha \ln(K_{it}/L_{it}) + \gamma \ln(H_{it}/L_{it}) + \psi \ln \text{DTOUR}_{it} + \Phi \ln X_{it} \quad (3)$$

$X_{it}$  mainly includes government size (GOV), industrial structure (STR), passenger capacity (PC), innovation capability (IA), and urbanization level (UL);  $Y_{it}/L_{it}$  is represented by per capita GDP ( $\text{APGDP}_{it}$ );  $K_{it}/L_{it}$  is represented by per capita physical capital ( $\text{APHY}_{it}$ );  $H_{it}/L_{it}$  is represented by human capital ( $\text{HUM}_{it}$ ); at the same time, in equation (3), unobserved individual fixed effects  $\mu_{it}$  and random disturbance terms  $\varepsilon_{it}$  are included. The econometric model is preliminarily set as:

$$\ln \text{APGDP}_{it} = \alpha_0 + \psi \ln \text{DTOUR}_{it} + \Phi \ln X_{it} + \mu_{it} + \varepsilon_{it} \quad (4)$$

In addition, considering that using the economic growth rate (EGR) to measure economic growth is more appropriate than using per capita GDP (APGD), EGR is used to replace APGD and equation (4) is appropriately adjusted to:

$$\ln\text{EGR}_{it} = \alpha_0 + \psi \ln\text{DTOUR}_{it} + \Phi \ln\text{X}_{it} + \mu_{it} + \epsilon_{it} \quad (5)$$

### 3.3. Variable Construction

#### 3.3.1. Dependent Variable

Economic Growth Rate (EGR): The Economic growth rate EGR is the ratio of the end-period GDP to the base-period GDP of a country or region. It is a dynamic indicator reflecting the degree of change in the level of economic development over a certain period and is also a fundamental indicator reflecting whether a country or region's economy is dynamic. Considering the impact of economic fluctuations on GDP values in various countries, this paper uses the real GDP of each country measured in constant US dollars and calculates the economic growth rate of each country using the formula:  $\text{EGR} = (\text{Current Year GDP} - \text{Previous Year GDP}) / \text{Previous Year GDP} * 100\%$ .

#### 3.3.2. Core Explanatory Variable

Domestic Tourism Development Level (DTOUR): Most studies use indicators such as the number of domestic tourists and domestic tourism revenue to measure the level of domestic tourism development. Considering that the number of tourists may involve double counting across scenic spots and different sectors, this paper uses the proportion of domestic tourism revenue to GDP to measure the level of domestic tourism development in each country.

#### 3.3.3. Data Sources

Based on existing research results and the availability of relevant variable data, a total of 121 countries were selected as the research sample from official websites of the World Bank, national statistical bureaus of various countries, OECD, and UNWTO, which have continuously published domestic tourism data and other related indicators from 1996 to 2015. Excel and Stata were used to organize the data and conduct empirical analysis. To maintain data stability and eliminate heteroscedasticity effects, the following variables were log-transformed: per capita physical capital (APHY), government size (GOV), industrial structure (STR), passenger transport capacity (PC), innovation capability (IA), and urbanization level (UL).

## 4. Empirical Analysis

### 4.1. Estimation Results

Before conducting the modeling analysis, this paper tested all variables using five different unit root test methods: Breitung, IPS, Fisher-ADF, Fisher-PP, and Hadri LM. The results show that the stationarity tests of the variables under most methods reject the null hypothesis that variables in panel data have a unit root, fully validating the stationarity of each variable series. Therefore, regression analysis for modeling can be directly carried out.

**Table 1.** Estimation Results of Static Panel and Dynamic Panel Models.

	(1)	(2)	(3)	(4)	(5)
	OLS	FE	RE	Differenced GMM	System GMM
L1. EGR				0.142*** (0.0535)	0.137*** (0.0434)
L2. EGR				-0.0298* (0.0529)	-0.0671* (0.07227)
DTOUR	0.0000396* (0.000375)	0.000148** (0.00103)	0.000177* (0.000549)	0.00176*** (0.000813)	0.00254* (0.00361)
APHY	-0.000306* (0.000548)	0.00486*** (0.00102)	0.000232* (0.000464)	0.00667*** (0.00345)	0.00452** (0.00322)
HUM	-0.000304*** (0.000111)	-0.000299*** (0.000131)	-0.000326*** (0.000102)	-0.000353** (0.000246)	-0.000575** (0.000349)
GOV	-0.00547*** (0.00223)	0.00452* (0.00460)	-0.00400** (0.00271)	0.000668 (0.0123)	0.0248** (0.0160)
STR	-0.0327*** (0.00888)	-0.0189*** (0.00722)	-0.0308** (0.00477)	-0.0268* (0.0752)	-0.00231* (0.0610)
PC	-0.0000730 (0.000552)	0.000689* (0.000615)	0.000141* (0.000495)	-0.00118* (0.00138)	-0.000464* (0.00139)
IA	-0.000405 (0.000363)	0.000593* (0.000470)	-0.000151 (0.000343)	0.000486* (0.000731)	0.000387* (0.000794)
UL	0.00139* (0.00250)	-0.0267*** (0.0127)	-0.000536 (0.00288)	-0.131*** (0.0607)	-0.0622* (0.0594)
_cons	0.194*** (0.0368)	0.158*** (0.0563)	0.181*** (0.0225)	0.628*** (0.308)	0.190* (0.473)
F-test		2.91***			
LM-test			99.87***		
Hausman test		48.83***			
R <sup>2</sup>	0.075	0.019	0.072		

Note: \*, \*\*, \*\*\* indicate significance at the 10%, 5%, and 1% levels, respectively.  
The numbers in parentheses are the standard deviations of the variables.

In the static panel section, the paper initially estimated the panel data using three static panel methods: pooled regression, random effects model, and fixed effects model. As seen from columns (1), (2), and (3) of Table 1: the F-test indicates significant individual effects in the panel data, strongly rejecting the null hypothesis of accepting pooled regression and considering the fixed effects estimation superior to the pooled regression estimation; the LM test strongly rejects the null hypothesis of no individual random effects, suggesting the random effects estimation is superior to pooled regression estimation; the Hausman test strongly rejects the null hypothesis that random disturbance terms are uncorrelated with explanatory variables, indicating that fixed effects estimation is superior to random effects estimation. Therefore, the estimation results of the fixed effects model are selected as the baseline regression results of the model. The fixed effects model estimation results show a positive correlation between economic growth rate and domestic tourism development level, which passes the 5% significance level test; when other conditions remain unchanged, a 1% increase in domestic tourism development level will increase the economic growth rate by 0.000148%.

In the dynamic panel section, considering the bidirectional causal relationship between domestic tourism development level and economic growth rate, it is necessary to investigate the endogeneity issue of domestic tourism development level. Therefore, this paper further estimates the model using the difference GMM and system GMM methods in the dynamic panel model, as shown in columns (4) and (5) of Table 1. Both the difference GMM and system GMM models have p-values less than 0.05 and significantly pass the F-test, indicating good overall model fit and robust regression results. At the same time, the over-identification test results of the two models show p-values greater than 0.05, so the null hypothesis of instrument variable validity cannot be rejected. From this, it can be

determined that the selection of the two instrumental variables (first and second lags of economic growth) in this part is valid and reasonable.

Comparing the estimation results of the static panel and dynamic panel models in Table 1, it can be seen that after overcoming endogeneity, the coefficient of the impact of domestic tourism development on the economic growth rate increases significantly. Taking the estimation results under the system GMM method as an example, for every 1% increase in the level of domestic tourism development, the economic growth rate increases by 0.00254%, which is about 17 times higher than the 0.000148% in the fixed effects model, fully indicating that the presence of endogeneity in the model significantly suppresses the estimated economic contribution of domestic tourism. In addition, variables such as APHY, GOV, and IA show slight differences in significance levels and signs under different estimation methods, but they do not have a substantial impact on the overall estimation results of the model.

## 4.2. Interpretation of Estimation Results

This section mainly interprets the estimation results of various variables in the system GMM, referring to the estimation results of other models to ensure the accuracy and robustness of the estimates.

Lagged variables of economic growth (L1.EGR and L2.EGR): Among all variables, the first and second lagged variables of economic growth are the most strongly correlated with economic growth, but the directions of their effects on economic growth are exactly opposite. Under the condition that other factors remain unchanged, a 1% increase in the first lagged variable will bring a 0.137% increase in the economic growth rate. This also reflects the stickiness characteristic of economic growth worldwide, meaning that factors such as the previous period's economic growth level and capital accumulation status have a significant impact on subsequent economic growth. However, a 1% increase in the second lagged variable will cause a 0.0671% decrease in the economic growth rate. This, to some extent, indicates that world economic growth has the characteristics of being unsustainable, fragmented, and unstable.

Per Capita Physical Capital (APHY) and Human Capital (HUM): Variables of per capita physical capital and human capital both passed the 5% significance level test. Under other conditions being constant, a 1% increase in per capita physical capital and human capital would respectively lead to an economic growth rate increase of 0.00452% and a decrease of 0.000575%. On one hand, this indicates that the high return on physical capital still remains the mainstream driver of economic growth in today's world; on the other hand, it also indicates that in the current global economic growth, the driving forces of human capital such as technology and education are insufficient. This is particularly evident in the domestic tourism sector.

Government Size (GOV): The variable of government size passed the 5% significance level test. Under other conditions being constant, a 1% increase in government size would raise the economic growth rate by 0.0248%. This indicates that government expenditures and investments as macroeconomic intervention measures worldwide play a significant positive role in improving market allocation efficiency. To some extent, this also suggests that government-led tourism development has a certain rationality.

Industrial Structure (STR), Passenger Capacity (PC), Innovation Ability (IA), and Urbanization Level (UL): These variables all passed the 10% significance level test regarding their impact on economic growth, but their effects and magnitudes differ. Among them, innovation ability has a positive effect on economic growth, but its impact is the smallest among all variables; industrial structure, passenger capacity, and urbanization level have a negative impact on economic growth. At first glance, this estimated result seems contrary to common knowledge but considering that most of the samples selected in this study are underdeveloped countries, it is understandable. Since underdeveloped countries have not yet effectively completed industrial structure upgrading, the overall improvement of innovation ability, strengthening of transportation infrastructure, and advancement of urbanization construction all require a large amount of upfront funds, policies, and

supporting facilities. Therefore, these factors contribute very little, or even negatively, to economic growth.

## 5. Summary

This paper, based on the Tourism-Led Growth Hypothesis, utilizes cross-country panel data from 121 countries spanning 1996 to 2015, employs three static panel models and two dynamic panel models, and constructs a multivariable linear econometric model to empirically examine the impact of domestic tourism development on economic growth. The research results show that domestic tourism has a significant positive effect on economic growth, indicating that the TLGH is applicable to domestic tourism development worldwide.

Based on the empirical analysis in this paper, the following conclusions can be drawn. First, the level of domestic tourism development varies greatly across countries. Against the backdrop of global economic rebalancing, this issue deserves broad attention. Second, on a global scale, domestic tourism development has a positively promoting effect on economic growth. Third, while focusing on the impact of domestic tourism development on economic growth, it is also necessary to pay attention to the effects of factors such as physical capital, human capital, government size, industrial structure, infrastructure (transport capacity), urbanization level, and innovation capability on economic growth. Considering that the majority of global tourism countries are developing nations, this point is particularly noteworthy. To some extent, the full realization of domestic tourism's promotion of economic growth also depends on the comprehensive improvement of these factors.

Based on this, the paper puts forward the following recommendations: First, in response to the uneven levels of domestic tourism development across the world, international organizations such as the United Nations World Tourism Organization (UNWTO) should fully implement the prosperous neighbor development policy by establishing inter-country exchange and cooperation mechanisms and counterpart support systems to promote the development of domestic tourism in less developed countries and regions. Second, countries should establish a coordinated development mechanism for the three tourism markets-domestic, inbound, and outbound-and apply the advantages of inbound and outbound tourism in management strategy, advanced technology, and management experience to domestic tourism, thereby maximizing the pulling effect of domestic tourism development on economic growth. Third, increase investment in tourism service facilities, focus on the cultivation of professional talent, institutional innovation, and tourism market regulation, accelerate the upgrading of tourism products and services, and promote domestic tourism towards higher quality and more efficient development. Fourth, increase investment in transportation infrastructure, accelerate the urbanization process, promote industrial structure upgrading, enhance the quality of human capital, and improve the country's overall innovation capability to provide more support for domestic tourism development and economic growth.

## References

- [1] Ridderstaat, J. R., Croes, R., & Nijkamp, P. Modelling Tourism Development and Long-run Economic Growth in Aruba. Tinbergen Institute, 2013, TI Discussion Paper; No. 13-145/VIII.
- [2] Alcalá-Ordóñez, A., Brida, J. G., & Cárdenas-García, P. J. Has the tourism-led growth hypothesis been confirmed? Evidence from an updated literature review. *Current Issues in Tourism*, 2024, 27(22): 3571–3607.
- [3] Durbarry, R., Tourism and Economic Growth: The Case of Mauritius. *Tourism Economics*, 2004,10(4): 389-401.
- [4] Fayissa, B., Nsiah, C. and Tadesse, B., Impact of Tourism on Economic Growth and Development in Africa. *Tourism Economics*, 2008, 14(4): 807-818.
- [5] Brida, J. G., et al., The Tourism-Led-Growth Hypothesis for Uruguay. *Tourism Economics*, 2010, 16(3): 765-771.

- [6] Balaguer, J. and Cantavella, M., Tourism as a Long-Run Economic Growth Factor: The Spanish Case. *Applied Economics*, 2002, 34(7): 877-884.
- [7] Goh, C., Li, H. and Li, M., A Comparative Analysis of Domestic and International Tourism Spatial Distribution: Trends and Impacts. *Journal of China Tourism Research*, 2014, 10(4): 388-413.
- [8] Limundić, B. and Kulić, Z., Tourism and Economic Growth in Mediterranean Region: Dynamic Panel Data Approach. *Acta Economica Et Turistica*, 2016, 2(1): 65-84.
- [9] Fayissa, B., Nsiah, C. and Tadesse, B., Research Note: Tourism and Economic Growth in Latin American Countries-Further Empirical Evidence. *Tourism Economics*, 2011, 17(6): 1365-1373.
- [10] Shan, J. and Wilson, K., Causality between Trade and Tourism: Empirical Evidence from China. *Applied Economics Letters*, 2001, 8(4): 279-283.