# Tourism development and growth

De Vita, G & Kyaw, KS



**Original citation & hyperlink:**
De Vita, G & Kyaw, KS 2016, 'Tourism development and growth' *Annals of Tourism Research*, vol 60, pp. 23-26
https://dx.doi.org/10.1016/j.annals.2016.05.011

DOI 10.1016/j.annals.2016.05.011
ISSN 0160-7383

Publisher: Elsevier

## Research Note

# TOURISM DEVELOPMENT AND GROWTH

**Glauco De Vita [1, *] and Khine S. Kyaw [2]**

*[1] Coventry University, UK.. * Corresponding author*

*[2] Cardiff Metropolitan University, UK.*

**Article accepted by *Annals of Tourism Research* on 18th May 2016; DOI: 10.1016/j.annals.2016.05.011**

We revisit the highly debated question of the impact of tourism development on economic growth to establish whether such an impact is contingent on a country's level of economic development. Within the confines of a Note, we have to be, by necessity, selective in our treatment of previous literature but as can be evinced from the recent review by Castro-Nuno et al. (2013), though the empirical evidence in support of the tourism-led growth hypothesis is overwhelmingly greater than that refuting it, the results of the few studies that account for the moderating effect of the level of economic development are mixed.

The above observation calls for more reliable econometric studies that make use of a large panel of countries over a long sample period, and that employ state-of-the-art econometric estimation methods to test a comprehensive model that includes the many variables that can be expected to have explanatory power. This Note answers precisely this call.

Unlike prior applied research that has used either single country data or traditional panel techniques that carry several disadvantages, we use a system generalized methods-of-moments (SYS-GMM) estimation methodology to investigate the tourism-growth relationship for a large panel of 129 countries over 1995-2011. As De Vita (2014) notes, this technique not only accounts for the underlying data dynamics, it also corrects for serial correlation, measurement error and endogeneity. Moreover, our comprehensive specification includes regressors identified as important explanatory variables in both the growth and tourism-led growth literature, drawing from data from public databases further complemented by tourism proprietary data acquired from the United Nations World Tourism Organization (WTO) Statistics.

Our model is specified as:

$$y_{i,t} = \sum_{k=1}^{q} \beta_k y_{i,t-k} + \theta'(L)\chi_{i,t} + \gamma_t + \alpha_i + \varepsilon_{i,t} \tag{1}$$

for country $i$=1,…, N, and $t$=$q$+1,…, $T_i$, where $y_{i,t}$ represents (the log of) GDP per capita, $\chi_{i,t}$ is a vector of regressors, $\theta(L)$ is a vector of polynomials, $q$ denotes the maximum lag length, $\gamma_t$ captures time-specific effects, $\alpha_i$ reflects unobservable country-specific effects, $\varepsilon_{i,t}$ is a white noise error, and $\beta$'s are parameters.

In both fixed and random effects settings, the lagged dependent variable included as a regressor may be correlated with the disturbance. The SYS-GMM methodology (Arellano and Bover, 1995), thanks to its instrumentation that combines moment conditions for the model in first differences with moment conditions for the model in levels, effectively deals with problems stemming from a possible correlation of explanatory variables with the error term, unobservable individual specific effects (removed during the first-difference transformation of equation 1 inherent in SYS-GMM), and endogeneity bias. Controlling for the latter is especially important in our context since many studies have found bi-directional causality between tourism development and GDP growth.

Following the specification employed by De Vita and Kyaw (2016), the variables include lagged GDP per capita (from World Development Indicators, WDI), tourism arrivals/receipts

(WTO), investment as a percentage of GDP (WDI), government consumption as a percentage of GDP (International Financial Statistics, IFS), inflation (World Bank), population growth (WDI), school enrolment (United Nations Educational, Scientific, and Cultural Organization Institute for Statistics), trade openness (International Monetary Fund Trade Database), political stability (WDI), and financial development (World Bank).

It is useful to elaborate further on the definition of two key variables. The first is tourism development, which we measure using tourism arrivals, and then, as a sensitivity check, using tourism receipts. Tourism arrivals measure the inflows of international visitors to the destination country. The expenditure of such visitors is regarded as tourism expenditure. Another key variable is financial development, which has been neglected in previous studies despite the fact that it can significantly affect growth by reflecting absorptive capacity (and the lack of its inclusion in growth equations, therefore, may make the regression misspecified). This variable is based on The World Bank measure of financial depth (see http://data.worldbank.org/indicator/FM.LBL.MQMY.IR.ZS).

Our income level disaggregation into low-, middle-, and high-income countries is based on gross national income (GNI) per capita calculated using the World Bank classification (low-income: $1,045 or less; middle-income: $1,046 - $12,735; high-income: $12,736 or more; see http://data.worldbank.org/about/country-and-lending-groups#Low_income).

**< TABLE 1 about here >**

Table 1 presents the results from the two critical SYS-GMM diagnostics: the Sargan’s test for the over-identifying restrictions of the SYS-GMM instruments discussed above, and the

Arellano-Bond AR(2) test for serial correlation. In the former, under the null hypothesis of instrument validity, the statistic is asymptotically distributed as a chi-square variable. The *p*-values (in brackets) indicate the probability of spuriously rejecting the null. Since all the *p*-values are above 0.05, we cannot reject the null of instrument validity at the customary 5% significance level. With regard to the latter, the statistics for the Arellano-Bond tests are based on the null hypothesis of no second-order serial correlation in the first-differenced residuals. Since at the customary 5% level we cannot reject the null in any of the cases considered, valid inference is ensured.

**< TABLE 2 about here >**

The SYS-GMM results (Table 2) show that the impact of tourism development on GDP growth does vary across countries at different stages of economic development. For middle- and high-income countries a 1% increase in tourism arrivals is associated with an increase in the per capita real GDP growth rate of 2.76% and 0.96%, respectively, but in case of low-income countries this coefficient is insignificant at the customary 5% level.

Our findings are in stark contrast, for example, to those by Eugenio-Martin et al. (2004) who found that - after decomposing their sample into three different groups according to GDP per capita - tourism growth was associated with economic growth only in low- and medium-income countries. From this evidence they conclude that tourism development contributes to growth only for countries with low GDP per capita, while such an impact “is unclear if the country is already developed” (p. 17). However, their study was based on a small panel of 21 Latin American countries over a relatively short sample period ending at 1998, and failed to account for important variables such as financial development, which proves to have a positive and significant effect in the case of high-income countries in our estimations. Our other coefficients have the expected sign (e.g., government consumption expenditure and inflation exhibit a negative correlation with growth), and several of them are significant at the customary 5% level.

**< TABLE 3 about here >**

As a sensitivity check, we re-estimate the model using tourism receipts (Table 3). This alternative measure for tourism development produces virtually identical results to those obtained using arrivals. The tourism development coefficient is, once again, not statistically significant at the 5% level for low-income countries, and the elasticity pertaining to middle-income countries (0.0241) too is confirmed to be of considerably higher magnitude than that of high-income countries (0.0084), thus confirming the robustness of our findings.

## REFERENCES


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

Castro-Nuno, M., Molina-Toucedo, J. A., & Pablo-Romero, M. P. (2013). Tourism and GDP: A meta-analysis of panel data studies. *Journal of Travel Research, 52*(6), 745–758.

De Vita, G. (2014). The long-run impact of exchange rate regimes on international tourism flows. *Tourism Management, 45*, 226–233.

De Vita, G., & Kyaw, S. K. (2016). Tourism specialization, absorptive capacity and economic growth. *Journal of Travel Research*. DOI: 10.1177/0047287516650042.

Eugenio- Martín, J. L., Morales, N. M., & Scarpa, R. (2004). Tourism and economic growth in Latin American countries: A panel data approach. FEEM Working Paper, 4/26.

**Table 1. SYS-GMM Diagnostics**

| | |
|---|---|
| Sargan's test | |
| Income classification | |
| Low-income countries | 28.356 ($p$ = 0.683) |
| Middle-income countries | 19.473 ($p$ = 0.765) |
| High-income countries | 22.845 ($p$ = 0.984) |
| Arellano-Bond second-order correlation test | |
| Income classification | |
| Low-income countries | 0.235 ($p$ = 0.962) |
| Middle-income countries | 0.714 ($p$ = 0.803) |
| High-income countries | 0.659 ($p$ = 0.517) |

**Table 2. SYS-GMM Estimation Results**

| Variables | Low-income | Middle-income | High-income |
|---|---|---|---|
| Lagged growth rate | 0.9203$^{***}$(95.608) | 0.9635$^{***}$(108.733) | 0.8192$^{***}$(36.165) |
| Tourism arrivals | 0.0028$^{*}$(1.654) | 0.0276$^{**}$(2.391) | 0.0096$^{***}$(7.320) |
| Investment | 0.0013$^{***}$(3.217) | 0.0026 (0.902) | 0.0016$^{***}$(5.170) |
| Government consumption | -0.0005$^{***}$(-3.139) | -0.0039$^{***}$(-2.726) | -0.0018 (-0.970) |
| Inflation | -0.0004 (-1.175) | -0.0006 (-0.620) | -0.0003$^{*}$(-1.937) |
| Population growth | -0.0032 (-0.633) | 0.0004 (0.291) | -0.0083$^{***}$(-3.134) |
| Secondary education | 0.0004$^{**}$(2.123) | 0.0031$^{***}$(2.761) | 0.0001 (1.187) |
| Trade | 0.0001 (0.537) | 0.0005 (0.738) | 0.0001$^{***}$(4.490) |
| Political stability | 0.0013$^{**}$(1.992) | 0.0444 (1.165) | 0.0034 (1.324) |
| Financial development | -0.0002 (-0.108) | 0.0001 (0.420) | 0.0002$^{***}$(3.148) |

Notes: Time effects were accounted for by incorporating time dummies which were found to be statistically insignificant. *t*-ratios in parentheses. $^{***}$, $^{**}$, and $^{*}$ denote statistical significance at the 1, 5 and 10% level, respectively.

**Table 3. SYS-GMM Estimation Results Using Tourism Expenditure**

| Variables | Low-income | Middle-income | High-income |
|---|---|---|---|
| Lagged growth rate | 0.8629*** (96.934) | 0.9689*** (93.259) | 0.8992*** (85.529) |
| Tourism expenditure | 0.0317* (1.891) | 0.0241*** (2.736) | 0.0084*** (6.783) |
| Investment | 0.0013*** (3.485) | 0.0037 (1.328) | 0.0015*** (5.079) |
| Government consumption | -0.0001** (-2.429) | -0.0003** (-2.353) | -0.0014 (-1.118) |
| Inflation | -0.0003 (-0.062) | -0.0025 (-1.010) | -0.0014** (-2.376) |
| Population growth | -0.0009* (-1.648) | -0.0037** (-1.964) | -0.0065 (-0.100) |
| Secondary education | 0.0003* (1.889) | 0.0023** (2.069) | 0.0002 (1.220) |
| Trade | 0.0001 (0.595) | 0.0002 (0.232) | 0.0001*** (4.504) |
| Political stability | 0.0044* (1.763) | 0.0593 (1.594) | 0.0032 (1.248) |
| Financial development | -0.0002 (-1.336) | 0.0002 (0.283) | 0.0002*** (5.927) |

Notes: Time effects were accounted for by incorporating time dummies which were found to be statistically insignificant. *t*-ratios in parentheses. ***, **, and * denote statistical significance at the 1, 5 and 10% level, respectively.