TOURISM DEVELOPMENT AND ECONOMIC GROWTH

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Highlights:

- The role of the level of economic development on the tourism-growth relationship
- We use SYS-GMM estimation on a panel of 129 countries over the period 1995-2011
- Our specification includes financial development as a proxy for absorptive capacity
- Positive effect of tourism is only significant for middle and high-income countries
- At low levels of economic development, tourism does not contribute to growth

We revisit the highly debated question of the impact of tourism development on economic growth with the aim of establishing 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 specification that includes the many variables that can reasonably 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 estimation techniques that carry several disadvantages, we use a system generalized methods-of-moments estimation (SYS-GMM)

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 endogenous growth and tourism-led growth literature, drawing from the most up-to-date data available from public databases further complemented by tourism proprietary data acquired from the United Nations World Tourism Organization (WTO) Statistics.

Our econometric model is specified as:

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

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, γ_t captures time-specific

effects, α_i reflects unobservable country-specific effects, $\varepsilon_{i,t}$ is a white noise error, and β's and θ's are parameters.

Since the model includes the lagged dependent variable as a regressor, in both the fixed and random effects settings such a regressor may be correlated with the disturbance, even if it is assumed that $\varepsilon_{i,t}$ is not itself auto-correlated. The SYS-GMM methodology (Arellano and Bover, 1995), thanks to its unique 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 the explanatory variables with the error term, the unobservable individual specific effects (which are 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 a bi-directional causality between tourism development and GDP growth.

The variables include lagged GDP per capita (from World Development Indicators, WDI), tourism arrivals/receipts (from WTO), investment as a percentage of GDP (from WDI), government consumption

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

It is useful to elaborate further on the definition of two key variables. The first is tourism development, which in this study is measured by tourism arrivals, and then, as a sensitivity check, by 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 a growth equation, 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 groups of countries is based on gross national income (GNI) per capita calculated using the latest World Bank Atlas classification (low-income: $1,045 or less; middle-income: $1,046 - $12,735; and high-income: $12,736 or more). GNI per capita has proven to be a reliable measure of economic development as it is highly correlated to other nonmonetary measures of the quality of life such as life expectancy at birth and mortality rates of children (see http://data.worldbank.org/about/country-and-lending-groups#Low_income).

Table 1 presents the results from the two critical SYS-GMM diagnostics, the Sargan-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 hypothesis. 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% significance level we cannot reject the null in any of the cases considered, we take the proposed specification as adequate for valid inference.

The SYS-GMM results (Table 2) show that the impact of tourism development on 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 capital real GDP growth rate of 2.76% and 0.96%, respectively, but in case of low-income countries this coefficient is statistically insignificant at the 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 a low GDP per capita, while such an impact “is unclear if the country is already developed” (p. 17). However, this 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 the level of financial development, which proves to have a positive and statistically significant effect in the case of high-income countries in our results.

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% statistical level.

As a sensitivity test, we also re-estimate the model using tourism receipts as a proxy for tourism development (Table 3). This alternative measure produces virtually identical results to those obtained using arrivals (the tourism development coefficient is only significant at the 10% level for low-income countries), thus confirming the robustness of our findings.

References

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Table 1. SYS-GMM Diagnostics

Sargan's instrument validity 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 serial 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 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 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.