

## EXPLORING THE EFFECT OF TOURISM ON ECONOMIC GROWTH IN THE SPANISH PROVINCES AND AUTONOMOUS COMMUNITIES (1999-2008)

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### Abstract:

The objective of this work is to explore the extent to which tourism contributes to the economic growth of the different Spanish provinces and autonomous communities in the period 1999-2008. The results obtained by panel data analysis show that the elasticity of the provincial productivity with respect to tourism is equal to 0.10 when overnight stays of foreign tourists is taken as the indicator of provincial tourism and 0.11 when total overnight stays are taken as the indicator. The results also show that the elasticity of the autonomous communities productivity with respect to tourism is slightly lower than the elasticity of the provincial productivity.

**Keywords:** tourism, economic growth, panel data, Spanish provinces.

**JEL Code:** C23, L83, O47, R53.

Throughout the second half of the 20th Century, a considerable number of studies indirectly demonstrated the important role that tourism had on economic development (Sinclair, 1998). It has been considered that income from foreigner tourists can be used to import capital goods (McKinnon, 1964), that tourism can favour employment, and generate additional tax income (Archer, 1995; Belisle and Hoy, 1980; Uysal and Gitelson, 1994), that increases the efficiency obtained with competition (Krueger, 1980) and that enables the development of economies at the local level (Helpman and Krugman, 1985). However, empirical research to confirm this contribution of tourism to economic growth was not begun until the 21st Century. Balaguer and Cantavella-Jorda (2002) were pioneers in econometrically analysing the hypothesis of tourism-led growth (TLG).

Since then, an increasing number of works with a similar objective have been published. More than 40 works have used time series analysis referring to a single country, among them: Dritsakis (2004), Durbarry (2004), Oh (2005), Kim et al. (2006), Katircioglu (2010), Brida et al. (2010), Jin (2011), and Arslanturk et al. (2011). About 16 studies have used panel data, among which are: Eugenio-Martin et al. (2004), Lee and Chang (2008), Narayan et al. (2010), and Seetanah (2011). Nevertheless, there are only a few that analyse the TLG hypothesis from a regional perspective. Among these, the study by Proenca and Soukiazis (2008) and that by Cortés-Jiménez (2010).

Following the line undertaken by these authors, the aim of this study is to analyse how tourism affects growth in Spain from a territorial perspective. However, the size of the autonomous communities in Spain is very variable, with some communities having a single province and others many, up to nine. Also, there may be provinces of the same community which have a large amount of tourism whereas the others do not. This study presents the novelty of taking the Spanish provinces as the units for analysis. The regional analysis has

also been included.

The paper is organised as follows: the next section describes the methodology used, the following section presents the sources of statistical information used. The results are given in the subsequent section; and the final section concludes.

## Methodology

There is a Cobb-Douglas production function (Y), in which labour (L), private capital (K) public capital (G), human capital (h) are established as independent factors, and an exogenous variable (A), which represents the total factor productivity interpreted as gains in efficiency when all factor inputs are used.

Such a production function may be expanded according to the endogenous neoclassical model of growth pioneered by Barro and Sala-i-Martin (1995). The Cobb-Douglas function may thus include further inputs that determine the efficiency of factor usage (Sala-i-Martin 1997). One of these variables has been tourism, as it is considered that tourism specialization speeds growth. As stated in Jin (2011), tourism must improve its service-related technology to attract more overseas tourists, and such technological improvements raise efficiency in the service sector.

The economic function adopted in this paper includes a measure of inbound tourism (to), referred to as *tourism capital*, which is a measure of tourism development or specialization.

This function is expressed as:

$$Y_{it} = A_{it} h_{it}^{\alpha} K_{it}^{\beta} G_{it}^{\gamma} to_{it}^{\varphi} L_{it}^{\lambda} \quad [1]$$

Where  $i$  refers to the fifty Spanish provinces (or 17 autonomous communities),  $t$  to the years studied (1999-2008) and  $\alpha$ ,  $\beta$ ,  $\gamma$ ,  $\varphi$  and  $\lambda$  reflect the elasticity of the gross value added (GVA) with respect to each of the regressors considered.

Taking logarithms, and under the assumption that the production function presents constant returns to scale in private and public capital and employment, given the human capital and the level of tourism, function [1] takes the following form in terms of product per worker.

$$y_{it} = a_{it} + \alpha h_{it} + \beta k_{it} + \gamma g_{it} + \varphi t o_{it} \quad [2]$$

where the lowercase variables express the logarithm of the variables in terms of working population.

Also, it is considered that  $a_{it}$  is the sum of a fixed time effect, common for all the provinces ( $\delta_t$ ), an individual effect constant for each province ( $e_i$ ) and a term that reflects the possible *spillover* ( $s_{it}$ ) effects between them. Thus,

$$a_{it} = \delta_t + e_i + \beta_s s_{it} \quad [4]$$

where  $\beta_s$  reflects the *spillover* effect and  $s_{it}$  is calculated following the definition of Holtz-Eakin and Schwartz (1995).

The production function to estimate is then expressed as follows, when also introducing the proportion of workers in the industrial sector ( $c_i$ ) as a control variable:

$$y_{it} = \delta_t + e_i + \beta_s s_{it} + \alpha h_{it} + \beta k_{it} + \gamma g_{it} + \varphi t o_{it} + \chi c_{it} \quad [5]$$

To further assess if domestic and foreign tourism contribute to provincial production, the previously specified production function must be defined distinguishing between domestic and foreign tourism. In logarithmic terms and by workers, the function is expressed as:

$$y_{it} = \delta_t + e_i + \beta_s s_{it} + \alpha h_{it} + \beta k_{it} + \gamma g_{it} + \varphi_1 t n_{it} + \varphi_2 t x_{it} + \chi c_{it} \quad [6]$$

where  $tn$  refers to domestic tourism and  $tx$  to tourism from abroad.

## **Data**

In the panel data studies that have analysed the TLG hypothesis, tourism is measured either by the number of foreign visitors (Eugenio-Martin et al. 2004; Adamou and Cleride, 2010; Dritsakis, 2012) or by the amount of income obtained from tourism (Fayissa et al. 2008, 2009; Narayan et al. 2010).

When the scope of analysis is regional, the indicators used depend on data availability. In the study by Cortés-Jiménez (2010), the indicators are the number of travellers according to their hotel occupation and the number of overnight stays; whereas in the study by Proenca and Soukiazis (2008) the number of overnight stays is used.

In the case of Spain, the only source of data available that allows this variable to be assessed at the provincial level is the series of Hotel Occupation Surveys offered by the Institute of Tourism Studies (IET, 2012).

In terms of hotel occupation, the data show a significant increase accumulated throughout the studied period (1999-2008) of 22%, and in terms of overnight stays an accumulated increase of 10%. The reasons for this are associated with the tourism model which has been established in Spain and whose main characteristic is mass tourism geared to enjoying the sun and the beach, and seeking escape, leisure and rest. The growth during this period was rooted in the positive evolution of the economy of the main tourist originating markets, the expansion of low-cost airlines or the attacks in Tunisia, Egypt and Turkey, among others (Exceltur, 2002-2009).

However, tourism growth has not been the same in all the provinces. Madrid was the leader in the number of total travellers with 11% of the total national average for the period, followed by the Balearic Islands (10%), Barcelona (10%) and Malaga (6%). It is generally observed that tourism is concentrated in the eastern, south-eastern and southern coastal

provinces of the country, the island archipelagos and Madrid. These differences between provinces hold when the values are taken in overnight stays per capita terms. Figure 1 shows a wide difference between provinces regarding domestic tourists, and an even more pronounced difference for foreign tourists.

The clear difference in tourism between the Spanish provinces, even between provinces of the same Autonomous Community, justifies the analysis of the effect of tourism on economic growth at provincial level. Nevertheless, it should be noted that this study is limited by data availability, because only 65% of the foreign tourists visiting Spain (IET, 2013a) and 20% of the domestic tourists inside Spain (IET, 2013b) stay in hotels.

The data on the GVA come from the series offered at provincial level by Alcaide and Alcaide (2000, 2001, 2006, 2009) and by Alcaide (2010). In order to assess the human capital, the data of the series by Serrano and Soler (2010), on the economic value of the human capital of workers have been used. Regarding private and public capital, the data come from the new estimations of the capital stock and services for the Spanish economy made by Mas, Pérez and Uriel (2011). The data on labour come from the series on human capital by Serrano and Soler (2010).

## **Results**

Table 1 shows the results of the estimates made when overnight hotel stays are used as the indicator of tourism capital. Column 2 of the table shows the results of estimating [5] for the Spanish provinces with fixed effects, by the generalised method of moments (GMM), using the instrumental variables of public and tourism capital in levels in a regression for one and two periods, in the presence of heteroscedasticity and autocorrelation. The overnight stays

of foreigners is used as an indicator of tourism capital.

Column 3 of Table 1 shows the results of estimating [5] by the same previous procedure, using the number of total overnight stays as the tourism capital indicator. Column 4 of Table 1 shows the results of estimating [6], which includes the domestic and foreign overnight stays as explanatory variables of tourism capital.

In these estimates, the coefficients of the rest of the explanatory variables of economic growth vary slightly. The elasticity for the human capital ranges between 0.34 and 0.39, for the private capital between 0.44 and 0.46 and for the public capital between 0.16 and 0.26. All these coefficients are in line with those obtained in previous estimates (Mamuneas et al. 2006; Pablo-Romero and Gómez-Calero, 2008; Boscá et al. 2010; Gómez-Antonio and Fingleton, 2012).

Regarding the tourism capital indicator, the following can be emphasised. Where overnight stays of foreigners is taken as the tourism capital indicator, the coefficient is significant and equal to 0.10. If the total of overnight stays is used, the coefficient is 0.11. If foreign and domestic tourism are differentiated by means of domestic and foreign overnight stays, the coefficient is significant and equal to 0.11 for overnight stays of foreigners and not significant for domestic overnight stays. The lack of significance of the latest variable may be due to multicollinearity relationships between the two variables.

Table 2 shows the same estimates again, but now using the number of travellers provided with hotel accommodation as the tourism capital indicator. The results of these new estimates are similar to those shown in Table 1, although now the coefficients that show the effect of tourism on productivity are slightly lower than those obtained previously. It should be noted that the study by Castro-Nuño et al. (2013), showed that the estimated elasticities for the tourism variable are lower in estimates using numbers of travellers as a

tourism capital indicator, which is consistent with the obtained results.

Finally, it has also been estimated [5] for the 17 autonomous regions of Spain, by generalised least squares (GLS)<sup>1</sup> in the presence of heteroscedasticity and autocorrelation. The overnight stays of foreigners are used as an indicator of tourism capital. Column 5 of Table 1 shows the results. Now, the coefficients of this new estimate are similar to those shown before, although now the coefficient that show the effect of tourism capital on productivity is slightly lower (0.07).

### **Conclusions**

This paper assesses the way in which tourism has influenced the GVA of the Spanish provinces and their economic growth in the period 1999-2008. The positive value of the coefficients estimated for the variables related to tourism capital shows that the gains in efficiency and productivity due to tourism have contributed positively to provincial production. The estimations made also show that the elasticity of the regional productivity with respect to tourism is positive but lower than the elasticity of the provincial productivity.

Therefore tourism is a key factor in the Spanish provinces and regions growth. Thus, the development of policies to promote tourism is of great interest. Policies to attract new tourists with the development of new marketing plans for example, and policies for the promotion of new activities or the creation of incentives for repeat tourism, are of great importance, in order to increase or maintain levels of current tourist arrivals.

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<sup>1</sup>There was no estimation by GMM because no valid instruments could be found.



## References

- Alcaide, J., and Alcalde, P. (2000), *Magnitudes Económicas Provinciales. Años 1985 a 1999*, FUNCAS, Madrid.
- Alcaide, J., and Alcalde, P. (2001), *Balance Económico Regional (autonomías y provincias) Años 1995 a 2000*, FUNCAS, Madrid.
- Alcaide, J., and Alcalde, P. (2006), *Balance Económico Regional (autonomías y provincias) Años 2000 a 2005*, FUNCAS, Madrid.
- Alcaide, J., and Alcaide, P. (2009), *Balance Económico Regional (autonomías y provincias) Años 2000 a 2008*, FUNCAS, Madrid.
- Alcaide, P. (2010), *Balance Económico Regional (autonomías y provincias) Años 2000 a 2009*, FUNCAS, Madrid.
- Archer, B. (1995), 'Importance of tourism for the economy of Bermuda', *Annals of tourism Research*, Vol 4, No 22, 918–930.
- Arslanturk, Y., Balcilar, M. and Ozdemir, Z. A. (2011), 'Time-varying linkages between tourism receipts and economic growth in a small open economy', *Economic Modelling*, No 28, 664–671.
- Balaguer, J. and Cantavella-Jordà, M. (2002), 'Tourism as a long-run economic growth factor: the Spanish case', *Applied Economics*, No 34, 877-884.
- Barro R.J., and Sala-i-Martin, X. (1995), *Economic Growth*, McGraw-Hill, New York.
- Belisle, F. and Hoy, D. (1980), 'The perceived impact of tourism by residents', *Annals of tourism research*, No 8, 83-97.
- Boscá, J.E., Escribá, J., Ferri, J. and Murgui, M.J. (2010), *La inversión en infraestructuras públicas: una panorámica y algunas conclusiones para las regiones españolas. D-2010-11, D.T. Dirección General de Presupuestos, Ministerio de Economía y Hacienda, Madrid.*
- Brida, J.G., Lanzilotta, B., Lionetti, S. and Risso, W.A. (2010), 'The tourism-led growth hypothesis for Uruguay', *Tourism Economics*, Vol 3, No 16, 765–771.
- Castro-Nuño, M., Molina-Toucedo, J.A. and Pablo-Romero, M.P. (2013), *Tourism and economic growth: A meta-analysis of panel data studies*, *Journal of Travel Research*, doi: 10.1177/0047287513478500.
- Cortés-Jiménez, I. (2010), 'Which type of tourism matters to the regional economic growth? The cases of

- Spain and Italy', *International Journal of Tourism Research*, No 10, 12-139.
- Dritsakis, N. (2004), 'Tourism as a long-run economic growth factor: an empirical investigation for Greece using causality analysis', *Tourism Economics*, Vol 3, No 10, 305-316.
- Dritsakis, N. (2012), 'Tourism Development and Economic Growth in Seven Mediterranean Countries: A Panel Data Approach', *Tourism Economics*, Vol 18, No 4, 801-816
- Durbarry, R. (2004), 'Tourism and economic growth: The case of Mauritius', *Tourism Economics*, Vol 4, No 10, 389-401.
- Eugenio-Martín, J. L., Morales, N. M. and Scarpa, R. (2004), *Tourism and Economic Growth in Latin American Countries: A Panel Data Approach*, *Fondazione Eni Enrico Mattei Working Paper Series*, Nota di Lavoro 26.
- Exceltur (2002-2009), *Informes de Perspectivas turísticas Exceltur*.  
<http://www.exceltur.org/excel01/contenido/portal/listawrap.aspx?nid=189>
- Fayissa B., Nsiah C. and Tadasse B. (2008), 'Impact of tourism on economic growth and development in Africa', *Tourism Economics*, Vol 4, No 14, 807-818.
- Gómez-Antonio, M. and Fingleton, B. (2012), 'Regional productivity variation and the impact of public capital stock: an analysis with spatial interaction, with reference to Spain', *Applied Economics*, Vol 28, No 44, 3665-3677.
- Helpman, E. and Krugman, P. (1985), *Market Structure and Foreign Trade*, Cambridge: MIT Press.
- Holtz-Eakin, D. and Schwartz A., (1995), *Spatial Productivity Spillovers from Public Infrastructure: Evidence from State Highways*, National Bureau of Economic Research, Working Paper 5004.
- IET (Instituto de Estudios Turísticos) (2012), *Encuesta de Ocupación Hotelera* <http://www.iet.tourspain.es/es-es/estadisticas/fichadecoyuntura/paginas/default.aspx>
- IET (Instituto de Estudios Turísticos) (2013a), *FRONTUR* <http://www.iet.tourspain.es/es-es/estadisticas/frontur/paginas/default.aspx>
- IET (Instituto de Estudios Turísticos) (2013b), *FAMILITUR*, <http://www.iet.tourspain.es/es-es/estadisticas/familitur/paginas/default.aspx>
- Jin, J.C. (2011), 'The Effects of tourism on economic growth in Hong Kong', *Cornell Hospitality Quarterly*, Vol X, No XX, 1-8.

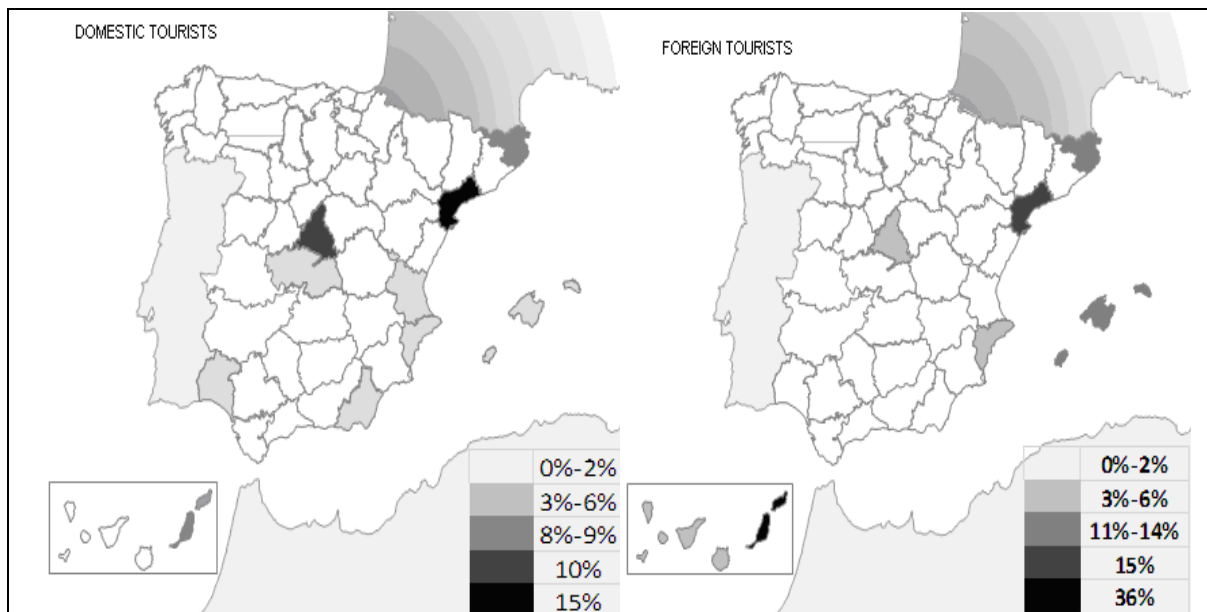
- Katircioglu, S. (2010), 'Testing the tourism-led growth hypothesis for Singapore-an empirical investigation from bounds test to cointegration and Granger causality tests', *Tourism Economics*, Vol 4, No 16, 1095-1101.
- Kim, H. J., Chen, M. H. and Jang, S. (2006), 'Tourism expansion and economic development: the case of Taiwan', *Tourism Management*, Vol 5, No 27, 925-933.
- Krueger, A. (1980), 'Trade policy as an input to development', *American Economic Review*, No 70, 188-292.
- Lee, C.-C. and Chang, C-P. (2008), 'Tourism development and economic growth: A closer look to panels', *Tourism Management*, No 29, 80-192.
- Mamuneas, T.P., Savvides, A. and Stengos, T., (2006), 'Economic development and the return to human capital: a smooth coefficient semiparametric approach. *Journal of Applied Econometric*, No 21, 111-132.
- Mas, M., Pérez, F. and Uriel, E. (2011), *El stock y los servicios de capital en España y su distribución territorial y sectorial (1964- 2010)*, FBBVA.
- McKinnon, R. (1964), 'Foreign exchange constrain in economic development and efficient aid allocation', *Economic Journal*, 74, 388-409.
- Narayan, P.K., Narayan, S., Prasad, A. and Prasad, B.C. (2010), 'Tourism, and economic growth: a panel data analysis for Pacific Island countries', *Tourism Economics*, Vol 1, No 16, 169-183.
- Oh, C-O. (2005), 'The contribution of tourism development to economic growth in the Korean economy', *Tourism Management*, No 26, 39-44.
- Pablo-Romero, M.P. and Gómez-Calero, M.P. (2008), 'Análisis por provincias de la contribución del capital humano a la producción en la década de los noventa', *Investigaciones Económicas*, Vol 1, No XXXII, 27-52.
- Proenca, S. and Soukiazis, E. (2008), 'Tourism as an alternative source of regional growth in Portugal: A panel data analysis at NUTS II and III levels', *Portuguese Economic Journal*, Vol. 7, 43-61.
- Sala-i-Martin, X. (1997), 'I just ran two million regressions', *American Economic Review*, Vol. 87, 178-83.
- Seetanah, B. (2011), 'Assessing the dynamic economic impact of tourism for island economies', *Annals of Tourism Research*, Vol 1, No 38, 291-308.
- Serrano, L. and Soler, A. (2010), *Series de capital humano*, IVIE, Valencia,

<http://www.ivie.es/banco/caphumser07.php>

Sinclair, M. T. (1998), 'Tourism and economic development: A survey', *Journal of Development Studies*, Vol 5, No 34, 1-51.

Uysal, M. And Gitelson, R. (1994), 'Assessment of economic impacts: Festivals and special events', *Festival Management and Event Tourism*, Vol 1, No 2, 3-10.

**Figure 1. Relative provincial weight of overnight hotel stays: domestic and foreign travellers (average for the period of analysis)**



Source: Own production. Database: IET (2012)

**Table 1. Provincial and Regional production function with tourism (1999-2008)  
(tourism indicator: overnight hotel stays)**

	GMM IV Provincial [5]	GMM IV Provincial [5]	GMM IV Provincial [7]	GLS Regional [5]
Human capital	0.39 *** (6.39)	0.34 *** (5.91)	0.39 *** (6.38)	0.37*** 8.77
Private capital	0.45 *** (9.44)	0.44 *** (9.21)	0.46 *** (9.23)	0.40*** (6.60)
Public capital	0.18 *** (4.02)	0.26 *** (5.59)	0.16 *** (3.53)	0.22*** (10.19)
Total overnight stays		0.11 *** (4.44)		
Domestic overnight stays			- 0.038 (- 1.27)	
Foreign overnight stays	0.10 *** (6.65)		0.11 *** (6.67)	0.07*** (6.12)
Spillover	- 0.05 (- 0.66)	- 0.003 (- 0.45)	- 0.005 (- 0.74)	-0. 003 (-1.29)
Underidentification test	32.467 ***	36.324 ***	54.091 ***	-
Weak identification test	54.326 ***	60.443 ***	25.907 ***	-
Overidentification test	9.822	14.704	10.203	-
Endogeneity test	16.5829 **	7.950 **	17.074 **	-
N° of Observations	400	400	400	170

**Table 2. Provincial production function with tourism (1999-2008)**  
**(Tourism indicator: travellers with accommodation in hotels)**

	GMM IV [5]	GMM IV [5]	GMM IV [7]
Human capital	0.39 *** (6.49)	0.38 *** (6.25)	0.39 *** (6.52)
Private capital	0.44 *** (9.40)	0.44 *** (8.90)	0.46 *** (9.56)
Public capital	0.20 *** (4.82)	0.23 *** (4.82)	0.19 *** (4.47)
Total tourists		0.088 *** (3.94)	
Domestic tourists			- 0.043 (- 1.62)
Foreign tourists	0.079 *** (5.53)		0.095 *** (5.36)
Spillover	- 0.002 (- 0.37)	0.0006 (0.10)	- 0.0023 (0.36)
Underidentification test	32.613 ***	34.396 ***	49.291 ***
Weak identification test	57.141 ***	59.994 ***	33.178 ***
Overidentification test	6.781	7.082	10.023
Endogeneity test	10.369 **	6.069 **	10.525 **
N° of Observations	400	400	400