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# TOURISM AND GROWTH IN A CROSS-SECTION OF COUNTRIES

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# Tourism and growth in a cross-section of countries

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## Abstract

We provided an empirical assessment of the relationship between tourism specialisation and economic growth, by updating findings of previous papers written on this issue. We used data for more than 150 countries covering different time spans between 1980 and 2005. Contrary to previous findings (e.g., Brau *et al.*, 2004 and 2007), tourism-based countries did not grow at a higher rate than non-tourism based countries, except for the 1980-1990 period for which, however, data on international tourism are not fully reliable.

**Keywords:** tourism specialisation, economic growth, developing countries

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## **1. Introduction**

The relationship between tourism specialisation and economic growth is one of the main topics under discussion in the growing field of tourism economics. Since the seminal works of Copeland (1991), Hazari and Sgrò (1995) and Lanza and Pigliaru (1995), the role played by tourism in the process of development of nations has captured increasing attention. In the last few years, many papers, mainly theoretically, have attempted to understand the real mechanisms at work, but many shadows still impede to shed light on this issue.

On the empirical side, the cross-country evidence is mainly based upon the works of Brau, Lanza and Pigliaru (2004 and 2007 – BLP from now on), and this lets room for more in-deep analysis in three directions at least. First, a complete robustness analysis is needed to confirm the positive correlation between tourism specialisation, particularly for small countries, and the pace of economic growth, which is the main result of BLP. Second, the potential effect of tourism specialisation in the long run is still open to discussion, since considerations about environmental and economic sustainability have to be taken into account by the theory and analysed by the data. Third, it is well known that economic growth does not translate automatically into poverty reduction and social inclusion; more research is hence needed to understand whether tourism-led growth is pro-poor or whether reduces the extent of inequality within the countries.

Our paper enters the debate on tourism and growth by empirically studying the cross-country relationship between economic growth, country size and tourism specialisation, by leaving the link between tourism, poverty and social sustainability to further research. The remainder of the paper is organised as follows: in Section 2 we discuss the theoretical models developed in the last few years. In Section 3 we discuss the methodology used, also with reference to previous empirical studies on the topic and we introduce the dataset assembled for this exercise. Section 4 presents the main results while a critical discussion and the agenda for further research is presented in the concluding section.

## **2. Theoretical background**

The relationship between tourism specialisation and growth has been tackled by two different strands of the literature. The former, which is not analysed in this paper, stems from the Keynesian theory of the multiplier. According to this approach, (international) tourism can be seen as an exogenous component of aggregate demand which has a positive effect on income, and hence on employment, through the multiplier. However, this approach is merely static and does not allow to infer the long run impact of tourism specialisation. A different approach, which is the one more extensively considered in the literature, explores the potentiality of the endogenous growth theory applied to the tourism sector.

The theoretical starting point is the application of Lucas' two sector endogenous growth model (1988) to the tourism case, presented by Lanza and Pigliaru (1995). They define the conditions under which the maximisation of the growth rate is associated to the specialisation in tourism. Their findings suggest that,

in a model where growth stems from labour productivity, if technological progress is higher in the manufacturing sector than in the tourism sector, tourism specialisation is growth enhancing if and only if the change in the terms of trade between tourism and manufacturing goods more than balances the technological gap of the tourism sector. This condition holds if the elasticity of substitution between the two goods is lower than one, hence when the two goods are not close substitutes one to each other.

A corollary of these findings develops with a persistent regularity: the countries specialised in tourism tend to have a small size (Candela and Cellini, 1997). Within the same framework used by Lanza and Pigliaru (1995), they show that the smaller the economy, the easier the terms of trade offsetting the technology gap, so that the opportunity cost of specialisation in tourism is smaller, the smaller the country.<sup>1</sup>

However, Lanza and Pigliaru (2000b) build over the previous papers by overlooking the importance of the natural resource endowment in a specific destination. They conclude that the tourist country takes advantage of the presence of natural resources: even when the increase in the terms of trade does not balance the technological gap, the exploitation rate of tourism resources can increase sufficiently to correct the technological gap and to enhance growth. This result leads to the issue of long term development and sustainability. In fact, if the resource is exploited at a larger rate than its natural rate of reproduction, in the long run the tourist path of development might not be viable anymore. Recent contributions to this issue are Cerina (2007), Giannoni and Maupertuis (2007) and Lozano *et al.* (2008).

At the empirical level, BLP (2004 and 2007) demonstrate that the growth rate of tourism countries is greater than the growth rate of other groups of countries, thereby supporting the Lanza and Pigliaru (1995) findings. They compare the relative growth performances of 17 “tourism countries” from a sample of 143 countries, observed during the 1980-95 (1980-2003) period, to state whether specialisation in tourism is a viable option to a number of less developed countries. They also demonstrate, consistently with Candela and Cellini (1997) that small tourism countries grow faster than other sub-groups considered in their analysis (OECD countries, Oil producers; Less Developed Countries, Small countries), showing that tourism specialisation appears to be an independent and important determinant of economic growth. A corollary of these results is that the role played by the tourism sector should not be ignored by the debate on whether smallness is harmful for growth (Easterly and Kraay, 2000). Indeed, half of the thirty countries classified as microstates are heavily dependent on tourism, and the small tourism countries perform much better (with an average growth rate of 2.5% in the period under consideration) than the small countries (1.13%). This result seems to be crucial to understand whether small size is a disadvantage or not with respect to growth: when small size is associated to tourism specialisation the outcome might be beneficial for growth.

BLP (2004, 2007) use a cross-country regression analysis, and this can be subject to critiques. Eugenio Martin *et al.* (2004) estimate the relationship between economic growth and tourism for Latin-American countries, during the 1985-98 period, by using panel data techniques. They study the role of tourism in economic growth, observing that tourism growth is associated with economic growth only in low and medium income countries, but not in high income countries. Finally,

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<sup>1</sup> See also Lanza and Pigliaru (2000a).

Sequeira and Macas Nunes (2008) use appropriate panel data techniques to show that tourism is a positive determinant of economic growth both in a broad sample and in sample of poor countries. Differently from BLP, however, they do not find that tourism is more relevant in small countries than in the general sample.

Recently, a few studies have examined whether tourism can be the engine of economic growth in specific countries (the tourism-led-growth hypothesis, TLG). In particular, using time series analyses, Balaguer and Cantavella-Jorda (2002), Durbarry (2004), Dritsakis (2004), Gunduz and Hatemi-J (2005), Kim *et al.* (2006) analyse the impact of tourism on economic growth respectively in Spain, Mauritius, Greece, Turkey and Taiwan, and they all conclude that there is a robust positive relationship between the two variables at play. Conversely, Oh (2005) does not find any long-run equilibrium relation between tourism and economic expansion for Korea (see also Katircioglu, 2009 for Turkey). He only finds a unidirectional causal relationship from economic growth to tourism in the short run. These papers focus on single countries and on the effect of international tourism only (see also Lee and Chang, 2008); Cortes-Jimenez (2008), using the Arellano-Bond estimator for dynamic panel data, focuses on two countries: Spain and Italy, by studying the importance of tourism expansion at the regional level and thus analysing the impact of domestic tourism too. Domestic tourism is found to be a relevant factor for Spanish growth, whereas international tourism seems to be more important for Italian economic growth. Finally, Nowak *et al.* (2007) theoretically and empirically test the so called TKIG hypothesis, for which international tourism affects growth via the import of capital goods.

### **3. Methodology and data**

Our study consisted of a cross-section analysis, using the benchmark provided by BLP (2004, 2007) and conducting an in-depth sensitivity analysis. We used the whole database of countries included by the World Bank in the World Development Indicators (WDI), and observed between 1980 and 2005. In the WDI online, data on international tourism (which refer to more than 150 countries) only date back to 1995, and this acted (and the time span under scrutiny) as a strong constraint to our analysis, with important implications on the results.

In previous versions of the WDI, data on tourism date back to 1989 (WDI CD-ROM, 2004) and 1980 (WDI CD-ROM, 2000). The World Bank stated that the WDI CD-ROM 2000 had retrieved data between 1980-1998 from the United Nations World Tourism Organisation's (UNWTO) old database, while the UNWTO started the new database in 2004 and asked the countries to revise their figures in order to match them with the new standards only from 1995 on. Therefore, according to the World Bank, data prior to 1995 (coming from the old UNWTO database) are not comparable with the current data and they should not be used together; for this reason, in the latest versions of WDI online, data prior to 1995 are not available. However, the UNWTO still publishes as unique series data on international tourism starting from 1990.

Having that in mind, in our study we used three versions of the data: i) data for the 1995-2005 period only, coming from the current version of WDI online; ii) data for the 1990-2005 period, collected by merging WDI data with data coming

from the UNWTO e-library, aware that data for the 1990-1995 period might be controversial; iii) in some of the robustness checks we used data for the 1980-2005 period, collected by merging data coming from previous versions of the WDI (World Bank, 2000 and 2004), aware that data prior to 1990 show serious comparability issues. Descriptive statistics for the variables used in this work are summarised in Table 1.

Following BLP (2004, 2007), the econometric specification used for the growth regression was:

$$growth = \beta_0 + \beta_1 Tourism + \beta_2 X + \beta_3 v + \varepsilon \quad (1)$$

where *growth* is the average growth rate of per capita income in the period under scrutiny; TOURISM measures the degree of tourism specialisation of the country at the beginning of the period; X is the vector of control variables which may include, in the different specifications used throughout the paper, the initial level of GDP per capita, a measure of trade openness (the share of the sum of import and export in the GDP), a measure of investment in human capital (proxied by the share of public spending on education in the GDP); a measure of physical investment as a percentage of GDP, the share of public expenditure in the GDP. Moreover, the *v* vector includes a series of dummy variables, such as the region of the world the country belongs to,<sup>2</sup> being or not an OECD country, being or not an oil producer,<sup>3</sup> being or not a small country.

International datasets such as the WDI have missing values for certain combinations of country and year. Consistently with the empirical literature on cross-country growth, we averaged out the variables used in the econometric exercise over five-year periods; this allowed us to avoid the chance of losing observations in the regression because of missing data in one specific year, and also to smooth out the effect of particular events and of measurement errors. We then built five periods in which variables took the average value of 1980-1984, 1985-1989; 1990-1994; 1995-1999; 2000-2005 respectively.

With the introduction of tourism specialisation as independent variable in the econometric model, we were able to check whether tourism was growth enhancing or not. The degree of tourism specialisation was defined as the share of international tourism receipts in the GDP. We then built dummy variables by defining “tourism country” those countries with a degree of tourism specialisation greater than or equal to 10% (or 20% in different specifications used) over the period of consideration. Another measure of tourism specialisation used in the sensitivity analysis was the ratio of the number of international tourist arrivals over the local population. It is worthwhile to note that throughout this paper and the related literature on tourism and growth, the word specialisation identifies the importance of the sector within the economy. Such indices of “tourism specialisation” are coherent with the theoretical literature recalled in the previous section although they are not, technically speaking, indices of specialisation. Indeed, the word specialisation is not used properly since, according to the international trade literature, the specialisation of a country in a particular sector is defined as the country's share of world exports of a good divided by its share of total world exports. The Balassa index is an index of specialisation coherent with such definition.

<sup>2</sup> We had dummy variables to identify 8 regions: Latin America; Sub-Saharan Africa; Middle East and Northern Africa; Central Asia; South Asia; East Asia and Pacific; Europe, North America.

<sup>3</sup> Oil exporters were defined as those countries belonging to OPEC.

Following BLP, we checked whether being small is an advantage if tourism is a key sector of the economy, thus adding to the results of Easterly and Kraay (2000) about the relationship between size and growth. We defined as small those countries with an average population of less than one million people over the period taken into consideration. Other measures of smallness used in the sensitivity analysis were the average population less than 3 million people, or the total surface area of the country lower than 10,000 or 50,000 squared kilometres.

## 4. Results

### *A. Tourism and growth in the 1990s*

Given that the availability of tourism data start from 1989 (1995), we mainly studied the growth performance of countries in the 1990-2005 (1995-2005) period. In Table 2 we listed those countries with a degree of tourism specialization greater than 10% in the 1990-1995 period. Such a characteristic is shared by 24 countries; among these, 22 meet the definition of small state (the exceptions are Dominican Republic and Jamaica, both with a population exceeding one million). The remaining 14 “small countries” for which the degree of tourism specialization is smaller than 10% were listed in Table 3.

We first checked whether tourism based countries outperformed other groups of countries in terms of growth rates, in order to update Lanza and Pigliaru (2000b) and BLP (2007) findings. Results were presented in Table 4. First, the average small country (SC from now on) grew faster (2.21% in the 1990-2005 period and 1.60% in the 1980-2005 period) than the average country in the whole sample (1.61% and 1.14% respectively). Second, when we isolated the performance of small tourism countries (STCs from now on), we saw that they grew faster (2.26%) than countries which did not specialise in tourism (1.22%), but only if we consider the whole 1980-2005 period. By restricting the observation to the period 1990-2005, we found that STCs grew less (1.88%) than small non-tourism countries (2.52%). To summarize, we observed that tourism specialisation seemed to be the key to explain the excellent growth performance of small countries, but only in the 1980s.

This was a first important difference with respect to BLP results, which raised the question whether the positive effect of tourism on growth, observed in BLP, was time dependent, stemming from specific factors at work in the 1980s. To tackle this point we underwent an econometric analysis through model (1), which allowed us to investigate the determinants of the real per capita income growth rate through a series of cross-sectional regressions. The main aim of the econometric study was to uncover whether there exists a systematic difference in the growth performance of the small tourism countries and, if this is the case, whether it could be attributed to tourism specialisation *per se*, rather than to other factors (like time).

We first tested whether in our dataset it was possible to detect any significant advantage/disadvantage for small countries (SC) and small tourism countries (STC) in the 1990-2005 period (Table 5), the period for which we avail of an almost fully comparable set of data on tourism specialisation. The main finding is that in 1990-2005 small countries did not outperformed other groups of countries in terms of average growth (regression 5.1); moreover, there was not any significant difference between the performance of small tourism countries and small non-tourism countries

(regression 5.2), nor this was due to the use of specific proxies for tourism specialisation, by using a cut off point of 20% rather than 10% to identify STC (regression 5.3), or a different cut-off point to isolate small countries (less than one million people as in regression 5.4 rather than a total surface area of less than 10,000 squared kilometres as in the previous regressions).

Moreover, tourism was not an independent factor affecting growth neither when the initial level of per capita GDP and the share of trade over GDP were inserted in the model (regression 5.5), nor when the average share of international tourism receipts in GDP rather than the dummies was inserted in the regression (regression 5.6). Finally, we checked whether the factor affecting economic growth was not the size of international tourism receipts but its growth overtime. In regression 5.7 we inserted as independent variable the growth rate of tourism specialisation between the 1990s and the 2000s: yet, the coefficient is insignificant (and negative). Therefore, STCs did not outperform in terms of growth the remaining countries (small or not) in the 1990-2005 period.

To avoid endogeneity problems, in Table 5 we measured tourism specialisation at the beginning of the period under scrutiny (average over the 1990-95 period). However, the inclusion of the measure of tourism specialisation as the average over the whole time span (1990-2005) did not make any change in the (in)significance of the coefficients (regressions 6.1 and 6.2).

As stated in Section 3, there might be a reliability issue regarding data for the 1990-1994 period. Therefore we decided to delete those observations and run the model with data from 1995 on (and therefore we were only able to test whether economic growth in the 1995-2005 period was affected by tourism specialisation). Results show that neither smallness *per-se* (regression 6.3) nor smallness joined with tourism specialisation (regression 6.4) enhanced growth. Finally, also in the 1995-2005 period neither the inclusion of the initial level of per capita GDP and of the share of trade over GDP (regression 6.5), nor the inclusion of the average share of international tourism receipts in GDP as a proxy for tourism specialisation (regression 5.6) did affect the (non) significant level of the coefficients. To summarise, tourism was not an independent factor of growth enhancement independently of the issue of data collection and reliability.

### *B. Tourism and growth in the 1980-2005 period*

The non significance of the tourism specialisation coefficient is deeply in contrast with results of BLP (for which smallness, and in particular specialisation in tourism for small countries was an independent factor positively affecting growth) and Sequeira and Macas Nunes (2008).<sup>4</sup> We then underwent further analysis. Firstly, we asked whether the different results solely came out from the different period under consideration (1990-2005 in our paper while BLP and Sequeira and Macas Nunes considered the 1980-2003 period). We therefore aimed to replicate BLP results, by running model 1 over the 25-year span starting from 1980 but to do so, we had to add to the database observations for the 1980-1989 years coming from the old UNWTO database. BLP and Sequeira and Macas Nunes in private correspondence

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<sup>4</sup> Sequeira and Macas Nunes used panel techniques by aggregating data for 1980-2005 over 5-year periods. Such methodology can not be used over the 1990-2005 period because of too little time periods. We therefore did not run any panel analysis in our paper.



disclosed that their dataset was built adding up the series reported in the WDI 2004 with data coming from a previous version of the WDI (2000). Although such merger should not be done (see previous section), for comparison purposes we did it.

Although our dataset is plausibly different from theirs,<sup>5</sup> our findings for the 1980-2005 period were now quite comparable with BLP's, particularly as regards the variables of interest. Smallness was found to be a (weak) advantage for growth (regression 7.1), but when we controlled for tourism specialisation of small countries (regression 7.2), STCs showed an important extra-performance in terms of growth both with respect to small non-tourism countries and with respect to other countries (even here, smallness *per se* gives an advantage to growth). In regression 7.3 we show that the change in the separation line between tourism and non-tourism small countries did not affect the significance of the STC coefficient. Regression 7.4 shows that the STC coefficient stayed significant also when other controls were included in the regression, and regression 7.5 shows that the significance also holds when tourism specialisation was measured as the share of international tourism receipts in the GDP.

Apart from some marginal differences in the significance of the other coefficients, results of Table 7 indeed confirmed BLP results and highlights the importance of tourism for overall growth over the 1980-2005 period: from the coefficients of regression 7.5 we can infer that the increase of one standard deviation in the level of tourism specialisation raises the growth rate by 0.58%. However, estimates of Table 7 might be problematic for three reasons. First, as previously stated, specialisation was measured by merging data that are not reliable to be compared internationally and overtime. Second, in regressions 7.1-7.5, coherently with BLP, we measured tourism specialisation as an average over the 25-year period. This might lead to a problem of endogeneity, since the development of the tourism sector might indeed be the effect of a sustained process of growth. To avoid endogeneity, the independent variable should be measured at the beginning of the period under scrutiny, as we did in Tables 5 and 6 for the 1990-2005 and 1995-2005 analysis. Regressions 7.6 and 7.7 replicate regressions 7.2 and 7.3 respectively by measuring the independent variables at the beginning of the period under scrutiny, that is, around 1980. Results are confirmed in sign, value and significance level, therefore endogeneity is not the driving factor affecting the estimates. Third, BLP did not consider in their set-up the basic controls that appear in almost all the empirical works on growth: investment in both physical and human capital, which are the base of any theoretical model of growth. Together with the initial level of GDP per capita (which checks for convergence) and openness (which indirectly attempts to test the export-led growth hypothesis), those variables are a “must” in all empirical studies on growth. In Table 8 we run some regressions including such controls. In regression 8.1 we included these variables in a model where the dependent variable is growth over the whole period (1980-2005): the STC coefficient was still significant. With respect to the sign of the other coefficients, consistently with the empirical literature on growth, we found a positive and significant sign for Investment (measured as the

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<sup>5</sup> The main differences were in the source of per capita GDP data, which is the World Penn Tables in BLP, while we elaborated data from the WDI; we decided to compute data on GDP and growth from WDI to be consistent with the source of all the other data. Moreover, the OIL dummy might have been computed in a slightly different way. Finally BLP added as a further control a dummy indicating that a country is a least developed countries, but we did not use it, by implicitly considering LDCs all the non-OECD countries. However, the initial level of per capita GDP explicitly and more precisely controlled for the level of development in some of the specifications.

share in the GDP), while the sign of Human capital was insignificant.<sup>6</sup> Finally, also the openness coefficient was not statistically significant<sup>7</sup>. In regression 8.2 we used a slightly different specification, in which we inserted the share of public consumption in the GDP and the share of tourism receipts in the GDP as a measure of tourism specialisation. The coefficient of tourism specialization was now weakly significant.

However, the significance of the tourism coefficient was not robust to different specifications of the model and to different measures of specialisation. In regression 8.3, for example, we measured tourism specialisation with the average over the 1980-1985 period rather than over the whole period (notice that this has the effect of decreasing the size of the sample) and we included a measure of human capital in the regression. In this, and in many other specifications run over the 1980-2005 period, the coefficient of tourism was not significant or weakly significant. We could hence affirm that the tourism-growth link might also be the effect of omitted variables bias or misspecification of the model.<sup>8</sup>

In regressions 8.4 and 8.5 we considered the same model of regressions 8.1 and 8.2 but estimated over the 1990-2005 period. In these and in all the other regressions run over the 1990-2005 and 1995-2005 period, coefficients for tourism specialisation were never significant. Therefore, the positive link between tourism and growth found in BLP, Sequeira and Macas Nunes and in our Tables 6 and 7 mainly stems from the excellent growth performance of small tourism countries in the 1980s. A last check to confirm whether the alleged effect of tourism specialisation on growth was concentrated in the 1980s was to run the model over the 1980-1990 period only. Regressions 8.6 and 8.7 (as all the other regressions run over the 1980-1990 period) show a positive and significant coefficient for tourism specialisation.

## 5. Concluding remarks

In this paper, we provided an empirical assessment of the relationship between tourism specialisation and economic growth in a cross-section of countries, by checking and updating findings of previous papers written on the tourism-led growth hypothesis. We used a panel of more than 150 countries with data covering 1980 to 2005.

Lanza and Pigliaru (1995) identified the conditions under which tourism specialisation brings a better economic performance than industrial development, and BLP (2004 and 2007) showed empirical evidence that tourism is an independent factor enhancing growth in a cross-section of countries. Similar results were

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<sup>6</sup> This might stem from errors in the measurement of human capital: as a proxy, we used the share of public expenditure in education in the GDP. For a general discussion on the measurement of the stock and the investment in human capital, and on the role of education in cross-country growth regressions see Kreuger and Lindahl (2001).

<sup>7</sup> On the ambiguous role of measures of openness in growth regressions see Rodrik and Rodriguez (2001).

<sup>8</sup> Although we did not run two million regressions as someone else did (Sala-i-Martin, 1997), results were not stable over the different specifications we could build with respect to variables included in the model and the different ways to measure each variable. Results are available from the authors upon request.

presented by Sequeira and Macas Nunes (2008) using panel techniques. Our results are substantially different.

Contrary to BLP and Sequeira and Macas Nunes, our main conclusions are that in the 1990-2005 (1995-2005) period there was not any significant causal relationship between tourism specialisation and economic growth. Such divergence is probably due to three different and interacting reasons: i) a data problem stemming from the way in which tourism specialisation data were collected by BLP and by Sequeira and Macas Nunes, merging data coming from different databases and that should have not be merged; ii) a misspecification of the BLP model, due to endogeneity and omitted variable bias.

However, our sensitivity analysis showed that measurement problems, endogeneity and omitted variable biases might not be the crucial factors explaining the difference in results. Our paper showed that the third, crucial, factor at play might be the period under scrutiny: the positive effect of tourism on growth was indeed concentrated in the 1980s while from 1990s onwards tourism was certainly not an independent factor enhancing growth: for example, STCs grew significantly faster (2.26%) than all the other small countries (1.22%) in the 1980-2005 period, but if the focus is on the 1990-2005 period, STCs grew less (1.88%) than non STCs (2.52%).

With respect to this last point, BLP argued that two alternative scenarios might occur in the long term: i) a “positive” scenario in which, thanks to a lower (than one) elasticity of substitution between tourism and manufacturing, persistent “terms of trade effect” allowing to maintain high growth rates appear; ii) a “negative” scenario in which the high growth rate stems from the increasing rate of exploitation of natural resources, thus conducive to a deterioration of the economic conditions in the long run. Our results seem to be consistent with the latter interpretation, and highlight a problem of economic sustainability in the long run: from 1990s onwards, tourism was certainly not an independent factor enhancing growth.

Our study provided evidence that tourism specialisation can not be the *panacea* to solve problems of development and growth, and contrasts with most of the empirical literature in this field of study. However, our results should not be surprising: indeed, the theory shows the conditions under which a tourism-based growth process can flourish although a lower than the average rate of technological progress within the sector. Our empirical evidence showed that a tourism-based country does not grow, on average, differently from any other type of country.

Further research should focus on three directions: first, it should continue the empirical work in an attempt to find more robust and more conclusive results about growth in the long run. Our suggestion is, to preclude the use of data prior to 1995 in order to avoid problems; this constrains the use of panel techniques to the future, when new data will be available; second, it is well known that growth does not translate automatically into poverty and inequality reduction: a more comprehensive assessment on the effects of tourism specialisation on poverty and inequality should be carried out.<sup>9</sup> Third, a more careful assessment of the effects of different tourism development strategies (i.e., through multinational tour operators rather than domestic small firms) should be carried out, both in terms of economic growth and poverty / inequality effects.

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<sup>9</sup> Di Pietro and Figini (2007) work in this direction.

**Table 1: Definition and descriptive statistics of variables**

Variable	Series	Description	N.Obs	Mean	Std.Dev	Min	Max	
Economic growth	g_cstUSS_80_05	Growth rate of real per capita income, 1980-2005	133	0.012	0.018	-0.041	0.082	
	g_cstUSS_90_05	Growth rate of real per capita income, 1990-2005	161	0.015	0.0230	-0.053	0.170	
	g_cstUSS_80-90	Growth rate of real per capita income, 1980-1990	137	0.009	0.027	0.060	0.074	
Initial level of per capita income	meanlngdp_pc_cstUS_S_80	Logarithm of real per capita income in 1980	140	7.576	1.519	4.909	10.722	
	meanlngdp_pc_cstUS_S_90	Logarithm of per capita income in 1990	169	7.542	1.514	4.812	10.413	
Openness to trade	open_all	(Import+export)/GDP, average over the whole period	181	85.714	49	19.729	417.448	
	open_90	(Import+export)/GDP, 1990-1995 average	173	80.124	44.569	15.564	263.143	
OECD	oecd	Dummy for OECD countries	186	0.140	0.348	0	1	
Oil	oil	Dummy for OPEC countries	186	0.065	0.246	0	1	
Smallness	sc_1m_all	Small country with less than 1 million people	180	0.211	0.409	0	1	
	sc_10	Small country with total surface < 10,000 km <sup>2</sup>	182	0.170	0.377	0	1	
Dummies for STCs	tsc_aall	Small tourism countries (tourist receipts > 10% of GDP)	185	0.097	0.297	0	1	
	brau_tsc_aall	Small tourist countries using BLP data for '80s (tourist receipts > 10% of GDP)	171	0.064	0.246	0	1	
	tsc_ball	Small non-tourism countries (tourist receipts < 10% of GDP)	183	0.710	0.258	0	1	
	brau_tsc_ball	Small non-tourist countries using BLP data for '80s (tourist receipts < 10% of GDP)	171	0.053	0.224	0	1	
	tsc_call	Small tourism countries (tourist receipts > 20% of GDP)	185	0.070	0.256	0	1	
	brau_tsc_call	Small tourist countries using BLP data for '80s (tourist receipts > 20% of GDP)	171	0.041	0.198	0	1	
	tsc_dall	Small non-tourism countries (tourist receipts < 20% of GDP)	183	0.098	0.299	0	1	
	brau_tsc_dall	Small non-tourism countries using BLP data for '80s (tourist receipts < 20% of GDP)	171	0.076	0.266	0	1	
	Tourism specialisation	ts01_all	Share of international tourism receipts on GDP, average over the whole period	186	0.068	0.109	0.000	0.596
		brau_ts01_all	Share of intern. tourism receipts on GDP, average 1980/05 using BLP data for '80s	141	0.172	1.463	0.001	17.39
Public Expenditure	g_gdp_all	Public consumption, share of the GDP, average over the whole period	178	17.179	7.408	4.689	58.310	
Investment	inv1_all	Investment, share of the GDP, average over the whole period	176	23.305	7.091	9.865	61.095	
Human capital	edu_all	Public expenditure in education, share of the GDP, average over the whole period	156	15.185	4.824	2.753	32.782	

**Table 2: Countries with index of tourism Specialisation > 10%**

Tourism countries (ITR>10% GDP)	Index of tourism Spec. (1990-95 average)
ANTIGUA E BARBUDA	74.07
ARUBA	43.15
BAHAMAS, THE	39.97
BARBADOS	30.42
BELIZE	12.38
BERMUDA	28.17
CYPRUS	17.13
DOMINICA	14.49
DOMINICAN REPUBLIC*	12.23
FIJI	14.33
GRENADA	18.38
GUYANA	10.01
JAMAICA*	19.59
MACAO, CHINA	48.44
MALDIVES	44.97
MALTA	22.43
SAMOA	15.79
SINGAPORE	10.92
SEYCHELLES	26.77
ST. KITTIS AND NEVIS	36.92
ST. LUCIA	42.12
ST. VINCENT DE GRENAD.	21.46
VANUATU	27.52
VIRGIN ISLANDS (U.S.)	45.69

[\*Not small countries]

**Table 3: Small countries with index of tourism specialisation < 10%**

Country name	Index of tourism Spec. (1990-95 average)
BAHRAIN	3.97
BHUTAN	1.08
CAPO VERDE	2.10
COMOROS	4.65
DJIBOUTI	1.41
EQUATORIAL GUINEA	1.14
FRENCH POLYNESIA	5.27
ICELAND	2.14
KIRIBATI	2.99
NEW CALEDONIA	3.34
SOLOMON ISLANDS	4.49
SURINAME	2.70
SWAZILAND	3.29
TONGA	7.15

**Table 4: Real per capita GDP growth in 1990-2005 and 1980-2005**

Country group	Real per capita GDP growth 1990-05(%)	No. Countries	Real per capita GDP growth 1980-05(%)	No. Countries
Small	2.21	23	1.60	19
Small tur.>0.10	1.88	11	2.26	7
Small tur.>0.20	1.59	6	2.41	5
Small <0.10	2.52	12	1.22	12
All	1.61	150	1.14	122

**Table 5: Growth and tourism specialisation**  
**Dependent variable: Average annual real per capita GDP growth, 1990-05**

	1	2	3	4	5	6	7
Constant	0.0238 [3.41]***	0.0255 [4.29]***	0.0256 [4.26]***	0.0240 [3.35]***	0.0091 [0.55]	0.0069 [0.40]	0.0244 [1.55]
Ln per capita GDP in 1990					0.0016 [0.83]	0.0020 [0.99]	0.0001 [0.04]
Openness					0.0001 [1.69]*	0.0001 [1.59]	0.0001 [2.07]
OECD	0.0071 [1.55]	0.0062 [1.36]	0.0062 [1.38]	0.0066 [1.41]	0.0048 [0.90]	0.0027 [0.51]	0.0049 [0.98]
Oil	-0.0037 [-0.90]	-0.0042 [-0.99]	-0.0043 [-1.01]	-0.0038 [-0.90]	-0.0051 [-1.11]	-0.0013 [-0.33]	-0.0033 [-0.91]
Small	0.0061 [0.70]						
STC>0.10		0.0050 [1.42]		0.0018 [0.44]	-0.0021 [-0.56]		
STC<0.10		0.0082 [1.22]		0.0087 [0.57]			
STC>0.20			0.0069 [1.91]				
STC<0.20			0.0061 [1.13]				
Share of tourism receipts in GDP						-0.0085 [-0.62]	-0.0008 [-1.43]
No. Of Obs	156	159	159	155	156	147	139
R <sup>2</sup>	0.1244	0.1337	0.1332	0.1252	0.1441	0.1385	0.1732

A full set of regional dummies is included in all regressions, but estimated coefficients are dropped for space reasons. Figures in brackets are t-statistics (standard errors are White-corrected). \* Significant at 90%, \*\* significant at 95%, \*\*\* Significant at 99%

**Table 6: Growth and tourism specialisation – sensitivity analysis**  
**Dependent variable: Average annual real per capita GDP growth, 1990-05**

	1	2	3	4	5	6
Constant	0.0252 [4.27]***	0.0135 [0.83]	0.0207 [2.66]***	0.0273 [4.15]***	0.0364 [1.85]*	0.0234 [1.24]
Ln per capita GDP in 1990		0.0005 [0.25]			-0.0035 [-1.38]	-0.0017 [-0.71]
Openness		0.0001 [1.34]			0.0002 [1.05]	0.0002 [1.01]
OECD	0.0066 [1.48]	0.0082 [1.47]	-0.0172 [-2.96]***	-0.0181 [-3.24]***	-0.0054 [-0.62]	-0.0097 [-1.17]
Oil	-0.0042 [-0.98]	-0.0041 [-0.89]	0.0010 [0.17]	-0.0001 [-0.02]	0.0026 [0.48]	0.0011 [0.18]
Small			0.0022 [0.21]			
STC>0.10	0.0067 [1.65]			0.0030 [0.67]	-0.0008 [-0.09]	
STC<0.10	0.0072 [1.28]			-0.0037 [-0.39]		
STC>0.20						
STC<0.20						
Share of tourism receipts in GDP		0.0110 [0.53]				-0.0229 [-0.57]
No. Of Obs	160	159	165	166	166	161
R <sup>2</sup>	0.1353	0.1584	0.1636	0.1613	0.1980	0.2125

A full set of regional dummies is included in all regressions, but estimated coefficients are dropped for space reasons. Figures in brackets are t-statistics (standard errors are White-corrected). \* Significant at 90%, \*\* significant at 95%, \*\*\* Significant at 99%

**Table 7: Growth and tourism specialisation**  
**Dependent variable: Average annual real per capita GDP growth, 1980-05**

	1	2	3	4	5	6	7
Constant	0.0199 [2.54]***	0.0239 [3.58]***	0.0238 [3.58]***	0.0397 [2.17]**	0.0388 [1.95]*	0.0233 [3.55]***	0.0236 [3.58]***
Ln per capita GDP in 1980				-0.0035 [-1.81]*	-0.0037 [-1.85]*		
Openness				0.0001 [3.83]***	0.0001 [4.35]***		
OECD	0.0090 [1.64]*	0.0080 [1.60]	0.0075 [1.49]	0.0180 [3.14]***	0.0134 [2.44]**	0.0082 [1.63]	0.0076 [1.50]
Oil	-0.0064 [-1.34]	-0.0055 [-1.24]	-0.0054 [-1.21]	-0.0038 [-1.00]	-0.0051 [-1.27]	-0.0055 [-1.23]	-0.0054 [-1.20]
Small	0.0075 [1.91]*						
STC>0.10		0.0238 [7.55]***		0.0197 [6.04]***		0.0230 [7.47]***	
STC<0.10		0.1410 [2.35]**				0.0134 [2.06]**	
STC>0.20			0.0246 [6.24]***				0.0247 [5.14]***
STC<0.20			0.0158 [3.17]***				0.0166 [3.59]***
Share of tourism receipts in GDP					0.0013 [2.77]***		
No. Of Obs	131	131	131	131	122	131	131
R <sup>2</sup>	0.2652	0.3572	0.3556	0.3697	0.3608	0.3572	0.3544

A full set of regional dummies is included in all regressions, but estimated coefficients are dropped for space reasons. Figures in brackets are t-statistics (standard errors are White-corrected). \* Significant at 90%, \*\* significant at 95%, \*\*\* Significant at 99%

**Table 8: Growth and tourism specialisation – sensitivity analysis**  
**Dependent variable: Average annual real per capita GDP growth, different periods**

	1	2	3	4	5	6	7
Constant	0.0090 [0.47]	-0.0069 [-0.39]	-0.0081 [-0.38]	-0.0180 [-0.88]	-0.0301 [-1.30]	0.0454 [2.08]**	0.0260 [1.04]
Ln per capita GDP in 1980 / 90	-0.0017 [-0.90]	-0.0022 [-1.11]	-0.0003 [-0.16]	0.0021 [1.01]	0.0032 [1.38]	-0.0054 [-2.10]**	-0.0040 [-1.28]
Public Expenditure		-0.0001 [-0.54]			-0.0009 [-2.28]**	-0.0002 [-0.67]	-0.0005 [-1.21]
Investment in GDP	0.0013 [3.84]***	0.0017 [4.12]***	0.0016 [3.71]***	0.0020 [3.34]***	0.0016 [2.70]***	0.0006 [1.64]*	0.0008 [2.00]**
Human capital	-0.0005 [-1.50]		-0.0005 [-1.48]	-0.0013 [-2.65]***			
Openness	0.0000 [0.14]	0.0000 [0.97]	0.0000 [0.75]	-0.0000 [-0.62]	0.0000 [0.32]	0.0001 [0.95]	0.0001 [1.48]
OECD	0.0137 [2.29]**	0.0106 [1.94]*	0.0016 [0.25]	0.0043 [0.81]	0.0056 [0.99]	0.0233 [2.51]**	0.0165 [1.66]*
Oil	-0.0068 [-1.68]*	-0.0063 [-1.34]	-0.0083 [-1.85]*	-0.0107 [-2.67]***	-0.0065 [-0.99]	-0.0138 [-1.65]*	-0.0089 [-1.02]
STC>0.10	0.0103 [2.14]**			-0.0098 [-1.07]		0.0412 [5.86]***	
STC<0.10	0.120 [1.84]*			0.0107 [2.50]**		0.0117 [0.90]	
Share of tourism receipts in GDP		0.0070 [1.89]*	-0.0160 [-0.58]		-0.0036 [-0.19]		0.0883 [1.93]*
No. Of Obs	116	122	102	141	157	122	114
R <sup>2</sup>	0.5255	0.5462	0.5496	0.4874	0.3741	0.4832	0.4042

A full set of regional dummies is included in all regressions, but estimated coefficients are dropped for space reasons. Figures in brackets are t-statistics (standard errors are White-corrected). \* Significant at 90%, \*\* significant at 95%, \*\*\* Significant at 99%

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