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Prospects and Limits of Tourism-Led Growth: A Cross-Country Analysis

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Abstract

We use an international panel data set to investigate the extent to which tourism specialization can help an economy grow. We find that specialization in tourism does promote economic growth but there are diminishing returns, meaning that the contribution of tourism becomes minimal after a certain level of specialization is reached. An average economy will reach its maximum tourism growth when tourism receipts reach the level of 34.2% of GDP but it will reach its maximum economic growth when the tourist receipts to GDP ratio reaches the level of 19.5%. Beyond that level tourism can still contribute to economic growth but at a smaller rate. Specialization in tourism can yield large dividends to countries at relatively early stages of development, but at the same time these countries should have an eye towards developing new areas of economic activity that will carry their economy further once the potential benefits of tourism are exhausted.

CONTENTS

ΠΕΡΙΛΗΨΗ

Χρησιμοποιούμε ένα διεθνές πάνελ δεδομένων για να διερευνήσουμε το βαθμό στον οποίο η εξειδίκευση στον τουρισμό μπορεί να βοηθήσει στην ανάπτυξη μίας οικονομίας. Βρίσκουμε ότι η εξειδίκευση στον τουρισμό μπορεί όντως να συνεισφέρει στην οικονομική ανάπτυξη αλλά με φθίνον ρυθμό. Μετά από κάποιο σημείο εξειδίκευσης η συνεισφορά του τουρισμού γίνεται αμελητέα. Μια μέση οικονομία θα φτάσει στο μέγιστο ρυθμό ανάπτυξης του τουριστικού τομέα όταν τα έσοδα από τον τουρισμό φτάσουν γύρω στο 34,2% του ΑΕΠ, ενώ η συνεισφορά του τουρισμού στην οικονομική ανάπτυξη αρχίζει να φθίνει όταν το ποσοστό εσόδων ξεπεράσει το 19,5%. Συνεπώς η εξειδίκευση στον τουρισμό μπορεί να αποφέρει σημαντικά οφέλη σε μια οικονομία που βρίσκεται σε σχετικά χαμηλά επίπεδα ανάπτυξης, την ίδια στιγμή όμως οι χώρες πρέπει να επιδιώκουν την ανάπτυξη νέων τομέων οικονομικής δραστηριότητας οι οποίοι θα δώσουν ώθηση στην οικονομία μετά που οι δυνατότητες του τουρισμού θα αρχίσουν να εξαντλούνται.

I. INTRODUCTION

Tourism and travel is a large and growing sector of the world economy. As world income grows, more individuals can afford the relative luxury of leisure travel. Demand for tourism services is expected to keep growing as more countries reach the stage of development where consumption of leisure services becomes affordable. Many countries have benefited from rising demand and developed vibrant hospitality sectors that generate much-needed foreign currency for the local economy. For many countries, particularly small ones, tourism is the single most important sector of the economy. This has a potential downside, as tourism demand is highly volatile and countries that become dependent on it are susceptible to negative shocks that can have a severe impact on the entire economy.

In some sense, tourism is to services what clothing is to manufacturing. It requires relatively low levels of technology and human capital. Countries at an early stage of development that have the required natural resources can relatively easily develop successful tourism sectors. Tourists usually demand four main types of goods and services: accommodation, food, transportation and entertainment services. These services are mostly labour intensive; hence tourism leads to the creation of many jobs that are primarily low-skilled. The development of a tourism sector can thus lead to an increase in production, income and employment and foster overall economic growth. Many developing countries have been able to rapidly ascend global income rankings by successfully exploiting their natural resources in this way.

One question that arises is whether there are limits to the extent that tourism can carry an entire economy forward. It seems reasonable to expect that diminishing returns will eventually set in that will put a limit to the extent that the tourism sector can contribute to the national economy. Consider, for example, the impact of labour cost. As a tourism country develops, wages rise. This will lead to an increase in the price of tourism services, which are mostly labour-intensive. At the same time, other countries might be beginning to develop their own tourism sectors, starting from a lower point of development and offering a similar product at a lower price. Thus a country specializing in tourism will become less competitive as it becomes richer.

The objective of this paper is to empirically examine the hypothesis that the development of a tourism sector can foster economic growth but that tourism's contribution to growth exhibits diminishing returns, becoming negligible beyond some level of specialization that we will provide an estimate for. Our analysis is based on an international panel of countries covering the period 1980-2005. We use both an economic growth framework and a reduced-form tourism growth regression in order to analyze the relationship between tourism specialization and economic growth. We expect that above a specific level of tourism specialization, tourism no longer contributes to economic growth, even though it can still continue to grow as a sector. The basic idea that tourism specialization can help countries increase their economic or tourism growth but at a diminishing rate runs counters to predictions of Ricardian trade models such as that of Lucas (1998).

It should be noted that development of a large tourism sector also has some well-known downsides. Most notable are the negative externalities on the environment and more generally on local residents' quality of life. Tourists consume a lot of water and energy at prices that often do not reflect the true cost of provision. As tourist destinations become hugely popular the effects of pollution and congestion begin to compromise the quality of life of local residents and the sustainability of natural ecosystems. The quality of the tourist product itself also begins to suffer. The external effects of tourism are obviously important but it is not something we address in this paper.

The rest of the paper is organized as follows. In section 2 we provide the recent literature and theoretical framework. In section 3 we present some descriptive evidence on the relationship between tourism specialization and growth. In section 4 we describe the econometric model and data. In section 5 we present and discuss the econometric results and we provide some concluding remarks in section 6.

II. EXISTING THEORY AND EVIDENCE

The mechanics of economic development and the achievement of economic growth lie at the core of economics. In a classic contribution, Rostow (1959) described how an economy might progress through different stages of development. He argued that economic modernization occurs in five basic

stages of varying length - traditional society, preconditions for take-off, take-off, drive to maturity, and high mass consumption. Each stage is characterized by distinct patterns of investment, consumption and social trends. The process by which societies move through the various stages of development continues to be a subject of debate to this day, as witnessed by the endogenous growth literature that has blossomed since the 1980s.

Some basic features of the mechanics of economic development can be illustrated with the Lucas (1988) model of endogenous growth. Consider a Ricardian trade model with labour as the unique factor of production. There are two countries, two goods and a representative household with CES preferences. Each country has a comparative advantage in one good and the two sectors differ in that knowledge accumulates faster in one than in the other. If the two goods are close substitutes, in equilibrium each country will completely specialize in the production of the good in which it has a comparative advantage and both countries will experience economic growth. The country specializing in the high human capital accumulation sector will grow faster, while the other country will benefit from technical progress in the other country and also grow, but at a slower rate. The implication of the model is that a country with a comparative advantage in a less productive sector (such as tourism) might still benefit from specializing in it. This result is primarily is due to the assumption of linear technologies implying constant returns to scale.

Empirical studies seeking to identify the impact of tourism on growth can be classified as either case studies or cross-country comparisons using panel data. The case study approach was dominant for many years because cross-country data were hard to obtain. Some recent examples of studies exploring the link between tourism and growth in particular countries include Ballaguer and Catavella-Jorda (2002) for Spain, Dritsakis (2004) for Greece, and Durbarry (2004) for Mauritius. These studies rely on econometric techniques such as cointegration and error correction models and obtain evidence of a strong relationship between economic growth and tourism receipts.

Some more recent studies have taken a cue from the empirical growth literature and try to exploit cross-country variation in growth experiences. Eugenio-Martín, Morales and Scarpa (2004) apply this to a sample of Latin American countries. Brau, Lanza and Pigliaru (2007) use cross country growth regressions to test

whether tourism specialization is a good option to a number of less developed countries (LDC) and regions. They compare the relative growth performance of 14 “tourism countries” within a sample of 143 countries. They document that tourism countries grow significantly faster than all the other sub-groups considered in their analysis (OECD, Oil, LDC, Small). Moreover, they show that the reason why they are growing faster is neither that they are poorer than the average; nor that they are very open to trade. Tourism specialization appears to be an independent determinant. Almost half of the twenty nine countries classified as “microstates” are heavily dependent on tourism. According to this classification, they conclude that the small tourism countries perform much better than the remaining small countries. In their findings, smallness per se can be bad for growth, while the opposite is true when smallness goes together with a specialization in tourism.

In a cross-country growth regression framework Sequeira and Nunes (2008) do not find support for the hypothesis that small countries benefit from specializing in tourism in terms of overall growth. They do find that poor countries benefit. In a related study, Sequeira and Campos (2007) find that the higher growth rate of tourism countries can be explained by other factors and can not be attributed to tourism specialization.

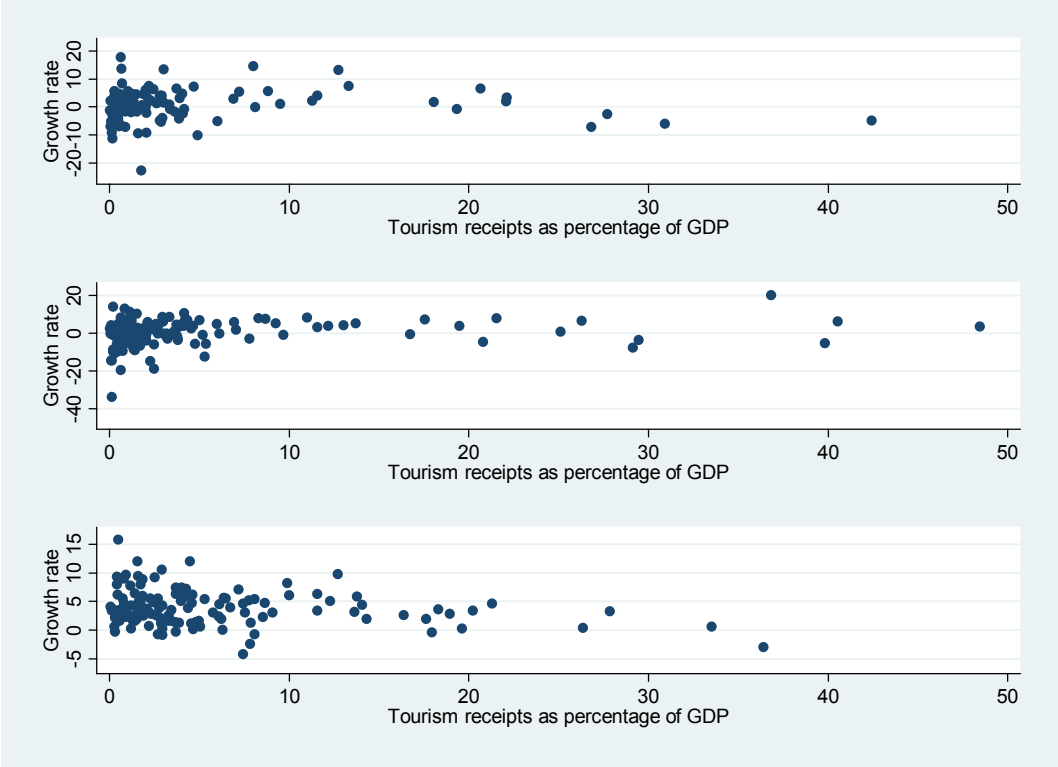
III. DESCRIPTIVE EVIDENCE

We start by looking for descriptive evidence on the relationship between tourism specialization and economic growth. We collected annual data for tourism receipts and economic growth in 167 countries during the period 1980-2005. The extent of tourism specialization varies substantially, with tourism receipts as a percentage of GDP ranging from 0.08% to 45.05%. Economics growth experiences are also quite wide, with growth rates ranging from -7.72% to 27.98%. A somewhat striking 27% of our sample has negative economic growth.

In Figure 1a we provide scatter plots of the degree of tourism specialization (measured as tourism receipts as a percentage of GDP) and economic growth for three specific years. This cross-sectional representation of the data does not provide any robust patterns. Focusing on countries with tourism specialization above 10%, there appears to be a slight negative relationship in years 1981 and 2004 but a positive relationship in 1992. Countries with relatively low

specialization are clustered closely together, making it hard to make out any patterns. For this reason in Figure 1b we plotted only observations with tourism specialization below 10%. There is a hint of a positive relationship in 1981 and 1992, while the data for 2004 are very dispersed. Overall, no clear patterns emerge from looking at the cross-sectional variation presented in these scatter plots.

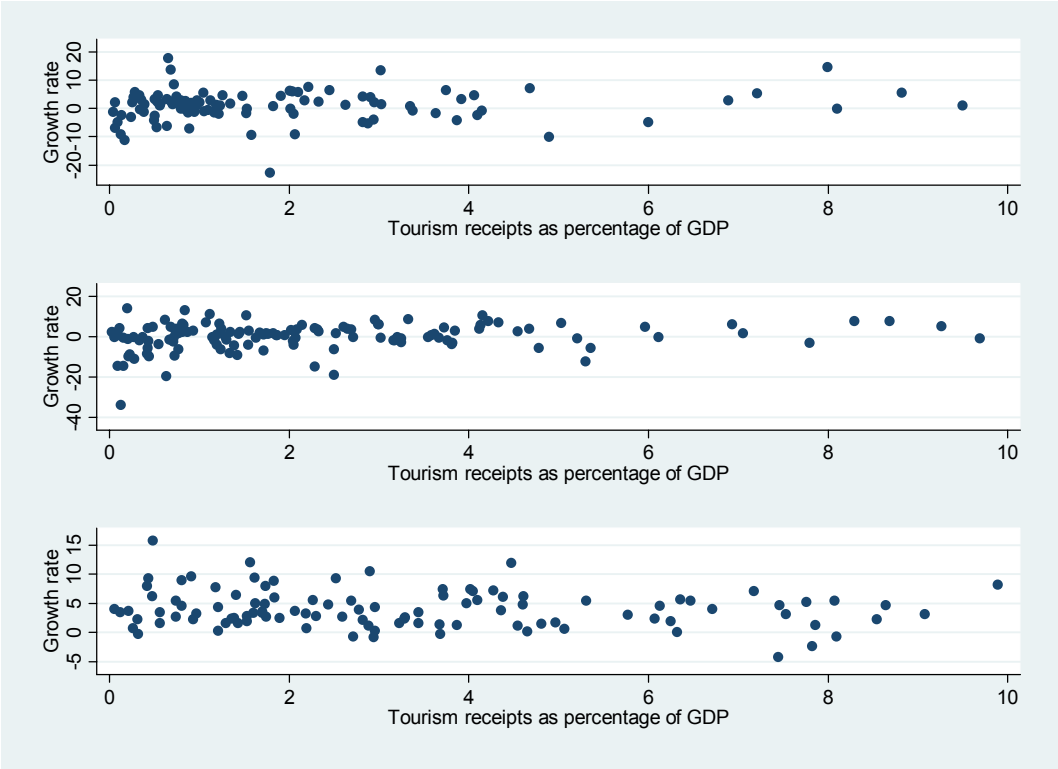
Figure 1a: Economic growth and tourism specialization for 1981, 1992 and 2004



In Figure 2 we focus on the time dimension. We selected the 21 countries that had the highest mean level of tourism specialization during our sample period and plotted the path of tourism specialization. Several of these countries maintained high levels of tourism specialization throughout the sample period. For example, Aruba, Barbados, and the Bahamas maintain receipts above 25% of GDP. Several countries that started at relatively low levels of specialization increased their dependence on tourism substantially (Samoa, Mauritius, Croatia, Dominica), while several countries that were highly specialized in the past are now exhibiting a downward trend (Bermuda, Bahamas, St Kitts and Nevis, and to

a lesser degree Malta, Cyprus, Grenada, Singapore). The fact that so many countries are currently on a downward trend in terms of tourism specialization seems consistent with the hypothesis that there are diminishing returns in that activity.

Figure 1b: Economic growth and tourism specialization for 1981, 1992 and 2004 (countries with less than 10% specialization only)



IV. ECONOMETRIC MODEL AND DATA

The focus of this study is on the relationship between tourism specialization and economic growth. Our analysis employs the economic growth regression framework proposed by Barro (1991) and Barro and Sala-i-Martin (2003). The use of panel data has several advantages compared to the case study approach that relies on time-series data. It increases the number of degrees of freedom and allows better large sample properties of the estimators. It also reduces endogeneity as country fixed effects can absorb the impact of any time-invariant,

country-specific variables, while they also capture omitted variables for countries' steady-state position.

Following Barro and Sala-i-Martin (2003), we use an empirical framework that relates the real per capita growth to two kinds of variables: initial level of state variables, such as stock of physical capital and the stock of human capital, and control variables whose effects correspond to their influences on the steady-state position, such as government consumption to GDP ratio and openness to GDP ratio. A possible caveat is that the limited data that are available on physical capital may be unreliable because they depend on arbitrary assumptions about depreciation. As an alternative, we assume that for given values of human capital a higher level of initial real per capita GDP reflects a greater stock of per capita physical capital. The stock of human capital can enter in the model in the forms of educational attainment and health indicators.

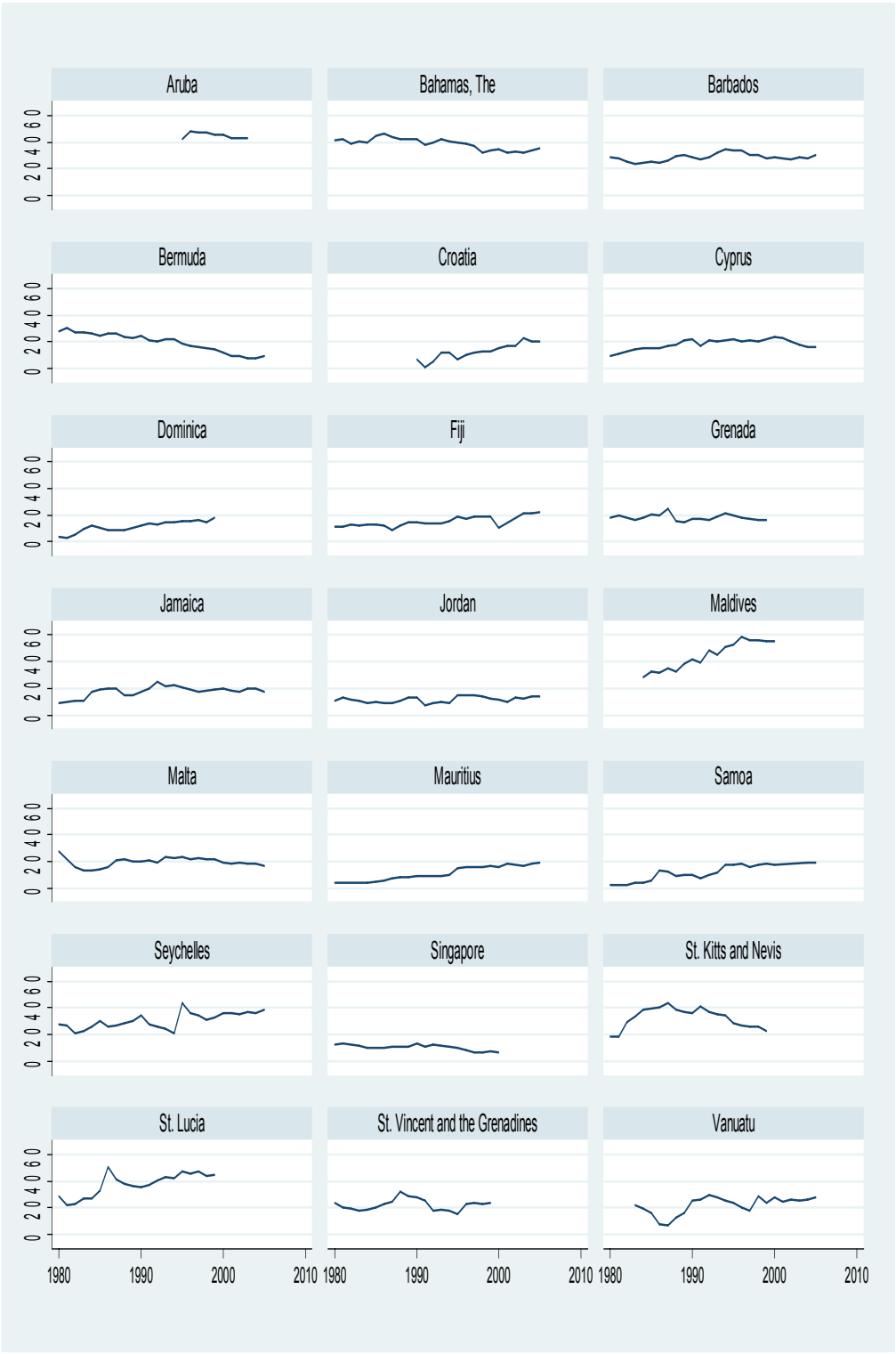
We can write a function for a country per capita growth rate in period t, DY_t , as

$$DY_t = F(Y_{t-1}, h_{t-1}, O_{1t} \ldots O_{rt}),$$

where Y_{t-1} is initial per capita GDP, h_{t-1} is initial per capita human capital and O_{it} is an array of *r* control variables. The Solow-Swan and Ramsey models predict that for given values of O_{it} variables, an increase in Y_{t-1} and h_{t-1} can reduce DY_t. However, the Uzawa-Lucas model predicts that for a given Y_{t-1} a higher value of h_{t-1} tends to raise the economic growth rate.

Assuming linearity, the equation above can be written as follows:

Figure 2: Degree of tourism specialization over time for selected countries



$$\mathrm{D}Y_t = \alpha Y_{t-1} + \beta h_{t-1} + \sum_{i=1}^{r} \gamma_{it} O_{it},$$

where *α*, *β* and *γ*'s are the r+2 parameters that are going to be estimated.

For the relationship between tourism specialization and tourism growth, we use a simple tourism growth regression as follows:

$$\mathrm{D}T_t = \delta T_{t-1} + \zeta T_{t-1}^2 + \sum_{i=1}^{k} m_{it} I_{it}.$$

Variables T_{t-1} and T_{t-1}^2 denote tourism receipts and tourism receipts squared in period t-1 and $\mathrm{D}T_t$ denotes the growth rate between period *t-1* and *t*. I_{it} is an array of *k* variables that are determinants of growth in tourism receipts. *δ*, *ζ* and m_{it}'s are the k+2 parameters that are going to be estimated. Note that T_{t-1} and T_{t-1}^2 are included also in the economic growth equation considering as control variables.

Data were obtained from the World Development Indicators (World Bank), United Nations Common Database, the CIA World Factbook and UNESCO World Heritage Centre. It is common in this literature to perform the analysis in terms of five-year periods rather than using annual observations. This minimizes the impact of measurement errors and the effects of cycles in variables. Because our panel is relatively short, we opted to use three-year instead of five-year periods. This leaves us with a final sample of 1100 observations. A complete description of the data is provided in the appendix.

Table 1 provides summary statistics for our main variables, where the statistics are taken over the entire sample of 1100 country-year observations. The variable 'tourism growth' measures the percentage increase in growth receipts from year to year. Some countries (Turkmenistan and Libya) have extremely high increases (over 490%) in tourism growth receipts because they started specializing in tourism during our sample and they start from a very low base.

Real per Capita Gross Domestic Product (RCGDP) in period *t-1* is used to measure conditional convergence and a negative sign is expected. The variable is entered in logarithmic form. As RCGDP may affect economic growth and economic growth may affect RCGDP, RCGDP in period *t-2* (its lagged variable) and RCGDP in period *t-3* are used as instruments.

Table 1: Data summary

Variable	Mean	Std. dev.	Median	Min	Max
Tourism receipts as % of GDP	5.41	8.07	2.43	0.08	45.05
Economic growth (%)	4.61	5.49	4.75	-7.72	27.98
Tourism growth (%)	32.73	65.48	17.50	-30.08	499.66
Real GDP per capita (US$)	5,673	8,423	1,724	130.6	37,572
Life expectancy (years)	65.23	10.44	68.66	38.83	79.42
Government consumption as % of GDP	17.37	7.52	16.24	4.69	58.31
Openness	84.71	49.36	72.92	19.78	412.92
log(n+δ+g)	-2.72	0.17	-2.69	-3.12	-2.40
Coastline	2.37	5.96	0.72	0	65.06
Heritage	0.16	0.85	0.01	0	9.37

Secondary Male Enrolment and Life Expectancy are used as proxies for human capital and a positive sign is expected according to the Uzawa-Lucas model. The correlation of the two variables is relatively high (about 0.8) and due to the lack of observations of Secondary Male Enrolment (we have data only for 1991 and 1999-2005 for the specific variable) we choose to use only Life Expectancy as a proxy of human capital after all. Government Consumption-Output ratio (G/Y) is used to measure political corruption and the overall negative effect of Government Consumption in long-run growth. The ratio of Exports plus Imports to output (Openness) is used to measure the impact of openness of the economy in its growth performance, and a positive sign is expected. The logarithm of the sum of population growth, physical capital depreciation and technology growth (log(n+δ+g)) is used to capture the effective depreciation rate of per capita capital according to the Solow model. As Mankiw et al (1992) we assumed (δ+g) to be the same for all countries and equal to 0.05. International tourism receipts

in percentage of GDP are used as proxy for the influence of international tourism[1].

Three other variables were used to identify which countries have the necessary resources to specialize in tourism. Tourists tend to choose destinations that offer beautiful natural settings, nice weather and other cultural or historical attractions. We use the number of UNESCO sites in each country as a way to capture cultural and historical attractions (Heritage variable, weighted by country size). The variable Coastline measures a country's coastline normalized by its overall size. Essentially the variable compares the length of a country's coastline to that of a fictional circular country of the same size (see appendix for details). Finally we used latitude to create four dummy variables according to the following climate zones: low-latitude and high-latitude temperate zones and low-latitude and high-latitude torrid zones.

V. RESULTS

In Table 2 we provide the results from random effects and fixed effects estimation of the determinants of tourism receipts growth. The Hausman test favours the fixed effects estimator. The fixed effects results support the idea that tourism specialization increases the growth of tourism itself but with a diminishing rate. Growth of the tourist sector starts declining after tourism receipts reach about 34.2% of GDP. Note, however, that this is the maximum point that tourism growth can reach due to tourism receipts and not the maximum point that economic growth (GDP growth) can reach. As a country can divert resources from tourism to another activity, we expect that the contribution of tourism to economic growth will reach its maximum point at a lower level of tourism receipts to GDP ratio. The same result obtains in the random effects estimates. Most

[1] Although investment to GDP ratio is essential determinant of economic growth rate, we were unable to find data for this variable for the time span of our sample. However, panel data account for omitted variables.

country-specific variables are not significant with the exception of one suggesting that countries situated near the equator have lower tourism growth.

Table 2: Tourism growth regressions

Variables	Fixed Effects	Random Effects
Tourism Receipts	8.02	2.37
	(2.16)***	(1.34)*
Tourism Receipts square	-0.12	-0.05
	(0.05)**	(0.03)*
Coast to perimeter (CTP)		-2.83
		(2.26)
Heritage		-5.77
		(5.89)
Latitude 20 to 40		-24.06
(In absolute values)		(15.57)
Latitude 0 to 20		-29.76
(In absolute values)		(13.75)**
Latitude 20 to 40		0.15
*CTP		(3.91)
Latitude 0 to 20		2.25
*CTP		(2.47)
Period trend	-4.64	-2.05
	(1.36)***	(1.22)*
Constant	20.08	59.42
	(8.89)**	(13.64)***
Wald test	6.02***	11.25
Observations	1100	1100
Hausman test	19.81***	-

Notes: *** stands for a 1% significance level; ** for 5% and * for 10%; standard errors appear in parentheses.

Results from the economic growth regressions are provided in Table 3. Again, we performed a Hausman test that favours the fixed effects estimator. The results reject the hypothesis that there is permanent growth due to tourism. Although almost all variables that capture tourism cultural and natural resources are insignificant, all the other growth determinants are significant with the appropriate signs. In Table 3 we also added the interaction of lagged GDP and tourism receipts as a growth determinant. The coefficient of this variable is positive but insignificant in the fixed effects case and negative and statistical significant in the random effects case. The fixed effects estimation's failure to produce the expected negative sign may be due to the fact that we do not instrument for lagged GDP and we cannot avoid a temporary measurement error in GDP. Re-estimating the model to account for endogeneity yielded a negative, though still insignificant coefficient (see Table 4 below). The random effects results suggest that, in terms of convergence, tourism can help small countries

grow faster and that, in terms of tourism, smaller countries grow more from tourism. Countries with larger coastline also seem to have higher economic growth, something that is consistent with the economic geography literature.

Table 3: Economic Growth regressions

Variables	Fixed Effects	Random Effects	Fixed Effects	Random Effects
Lag of GDP (LGDP)	-20.43 (1.82)***	-2.12 (0.53)***	-21.00 (1.94)***	-1.58 (0.57)***
LGDP* Tourism Receipts	-	-	0.087 (0.10)	-0.15 (0.06)**
Lag of life expectancy	0.40 (0.11)***	0.26 (0.07)***	0.40 (0.11)***	0.24 (0.07)***
Government consumption	-0.49 (0.10)***	-0.36 (0.06)***	-0.50 (0.10)***	-0.37 (0.06)***
Openness	0.08 (0.02)***	0.03 (0.011)***	0.08 (0.02)***	0.03 (0.01)***
log(n+δ+g)	1.18 (3.23)	-4.78 (2.59)*	0.99 (3.24)	-4.63 (2.58)*
Tourism Receipts	1.78 (0.24)***	0.61 (0.16)***	1.15 (0.79)	1.73 (0.50)***
Tourism Receipts square	-0.034 (0.006)***	-0.01 (0.004)***	-0.036 (0.007)***	-0.01 (0.004)**
Coast to perimeter (CTP)	-	0.39 (0.22)*	-	0.36 (0.22)
Heritage	-	-0.52 (0.58)	-	-0.17 (0.59)
Latitude 20 to 40 (In absolute values)	-	1.57 (1.76)	-	1.48 (1.75)
Latitude 0 to 20 (In absolute values)	-	-2.25 (1.80)	-	-2.29 (1.79)
Latitude 20 to 40 *CTP	-	-0.36 (0.39)	-	-0.27 (0.39)
Latitude 0 to 20 *CTP	-	-0.32 (0.31)	-	-0.32 (0.31)
Constant	132.79 (16.53)***	-7.39 (8.54)	136.47 (17.11)***	-9.94 (8.56)
Wald test	34.27***	143.92***	30.07***	150.24***
Observations	1033	1033	1033	1033
Hausman test	154.02***	-	149.63***	-

Notes: *** stands for a 1% significance level; ** for 5% and * for 10%; standard errors appear in parentheses.

In Table 4 we present results from estimation that accounts for the endogeneity of physical capital. As we have exact identification we need only to test for under-identification and the validity of our instruments. The Anderson canonical correlations LR statistic test reject the null of under-identification and the Cragg-Donald F-statistic test confirms that our excluded instrument is correlated with the endogenous regressor. All coefficients are significant with the appropriate

signs except of the coefficient of effective depreciation rate of per capita capital which is insignificant. After correcting for the endogeneity issue of GDP, we conclude that tourism can help an economy grow but with diminishing growth rate. The estimates imply that the maximum economic growth from tourism can be reached when tourist receipts to GDP reach a level of roughly 19.5%.

Table 4: Economic Growth regressions allowing for endogeneity of physical capital

Variables	Fixed Effects	Fixed Effects
Lag of GDP (LGDP)	-28.19 (2.51)***	-27.64 (2.56)***
LGDP* Tourism Receipts	-	-0.09 (0.10)
Lag of life expectancy	0.49 (0.11)***	0.49 (0.11)***
Government consump	-0.58 (0.12)***	-0.57 (0.12)***
openness	0.09 (0.02)***	0.09 (0.02)***
log(n+δ+g)	-4.09 (3.46)	-4.20 (3.45)
Tourism Receipts	1.58 (0.24)***	2.18 (0.76) ***
Tourism Receipts square	-0.041 (0.007)***	-0.039 (0.007)***
Wand test	28.36***	24.88***
Observations	764	764
Underidentification test	705.10***	704.65***
Weak identification test	653.09***	325.11***
Sargan Statistic	0.913	0.881

Notes: *** stands for a 1% significance level; ** for 5% and * for 10%; standard errors appear in parentheses.

VI. CONCLUSIONS

Many countries have been able to achieve high growth rates by specializing in the tourism industry. A question arises whether the contribution of tourism to a country's growth can continue indefinitely as suggested by Ricardian trade models, or whether there are limits to tourism-led growth. In order to address this question we compiled an international panel data set covering about 125 countries over the period 1980-2005. Our results contradict the Lucas argument as we find that countries grow at a diminishing rate once they move beyond some level of tourism specialization. Countries reach their maximum tourism growth when the tourism receipts to GDP ratio reaches the level of 34.2% but they reach their maximum economic growth due to tourism when tourist receipts

to GDP ratio reach the level of 19.5%. After 19.5% tourism can still contribute to economic growth but at a smaller rate and countries may be better off diverting their resources to other areas of economic activity.

These results are obtained from cross-sectional analysis and are therefore average effects over a large number of countries with diverse circumstances. Clearly each country should decide the extent of its tourism specialization based on its particular characteristics, such as its natural resources, human capital, and technological level. The general message that comes out of this analysis is that specialization in tourism can yield large dividends to countries at relatively early stages of development, but at the same time these countries should have an eye towards developing new areas of economic activity that will carry their economy further once the potential benefits of tourism are exhausted.

REFERENCES

Ballaguer. Jacint and Cantavella-Jordá. Manuel (2002). "Tourism as a Long-Run Economic Growth Factor: The Spanish Case". *Applied Economics*. 34. 877-884.

Barro. Robert (1991). "Economic Growth in a Cross Section of Countries". *Quarterly Journal of Economics*. 106(2). 407-444.

Barro. Robert and Xavier Sala-i-Martin (2003). *Economic Growth*. Cambridge. MA: The MIT Press.

Brau. Rinaldo. Alessandro Lanza and Francesco Pigliaru (2007). "How Fast are Small Tourism Countries Growing? Evidence from the Data for 1980-2003". *Tourism Economics*. 13 (4). 603-614.

Dritsakis. Nikolaos (2004). "Tourism as long-run economic growth factors: an empirical investigation for Greece using causality analysis". *Tourism Economics*. 10 (3): 305-316.

Durbarry. Ramesh (2004). "Tourism and economic growth: the case of Mauritius". *Tourism Economics*. 10 (4): 389-401.

Eugenio-Martín. Juan Luis. Noelia Martín Morales and Riccardo Scarpa (2004). "Tourism and Economic Growth in Latin American Countries: A Panel

Data Approach". Fondazione Eni Enrico Mattei (FEEM) Working Paper No. 26.2004.

Lanza. Alessandro and Francesco Pigliaru (2000). "Why Are Tourism Countries Small and Fast-Growing?". in Amedeo Fossati and Giorgio Panella (eds). *Tourism and Sustainable Economic Development*. Dordrecht: Kluwer Academic Publisher. pp. 57-69.

Lucas. Robert E. Jr. (1988). "On the Mechanics of Economic Development". *Journal of Monetary Economics*. 22. 3-42.

Mankiw. N. Gregory. David Romer and David Weil (1992). "A Contribution to the Empirics of Economic Growth". *Quarterly Journal of Economics*. 107. 407-437.

Romer. David (2002). *Advanced Macroeconomics*. Boston: McGraw-Hill.

Rostow. W. W. (1959). "The Stages of Economic Growth." *The Economic History Review. New Series*. 12(1). 1-16.

Sequeira. Tiago Neves and Carla Campos (2007). "International Tourism and Economic Growth: A Panel Data Approach." in Álvaro Matias. Peter Nijkamp and Paulo Neto (eds.). *Advances in Modern Tourism Research: Economic Perspectives*. Physica-Verlag HD. pp. 153-163.

Sequeira. Tiago Neves and Paulo Maçãs Nunes (2008). "Does Tourism Influence Economic Growth? A Dynamic Panel Data Approach." *Applied Economics*. 40. 2431-2441.

Sinclair. M. Thea (1998). "Tourism and Economic Development: A Survey". *Journal of Development Studies*. 34. 1-51.

APPENDIX: DATA DESCRIPTION

The dataset includes 167 countries during the period 1980-2005. 51 countries were removed due to missing values problems for the majority of our variables. The three main sources of data for our dataset are the series form World Development Indicators. CIA-The World Factbook and UNESCO World Heritage Centre. Data are not available for all countries in all years.

Variable	Description	Source
Average Tourism Specialization	*International Tourist Receipts / GDP at market prices*	World Bank Development Indicators. International Tourist Receipts current US$/ *GDP at market prices*
Real per capita GDP Levels	US$. base year 2000	World Bank Development Indicators. GDP per capita
Average Share of Trade	*Imports (as % of GDP) + Exports (as % of GDP)*	World Bank Development Indicators. Imports & Exports of goods and services (% of GDP)
Government Consumption	% of GDP	World Bank Development Indicators. General government final consumption expenditure (% of GDP)
Secondary Male Enrolment	% of net and gross	World Bank Development Indicators. School enrollment. secondary. male (% net) & (% gross)
Life expectancy	Life expectancy (Years)	World Bank Development Indicators. Life expectancy at birth. total (years)
Population	Total Population	World Bank Development Indicators. Population. total
Heritage	number of the cultural and natural sites	UNESCO World Heritage Centre
Latitude	location of country; north or south of the equator	CIA-The World Factbook
Coastline	total length of the boundary between the land area (including islands) and the sea	CIA-The World Factbook
Area in sq km	sum of all land and water areas (in square kms)	CIA-The World Factbook

Notes: 1. International tourism receipts are defined as: “expenditures by international inbound visitors. including payments to national carriers for international transport. These receipts should include any other prepayments

made for goods or services received in the destination country. They may also include receipts from same-day visitors. except in cases where these are so important as to justify a separate classification.

2. *Calculation for coast to perimeter variable:*

Coast to perimeter =coastline/perimeter. Countries' perimeter was approximated using the length of a circle-country's circumference as follows: Perimeter=2π*sqrt(area/π)

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