

Cortes-Jimenez, Isabel

Conference Paper

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46th Congress of the European Regional Science Association: "Enlargement, Southern Europe and the Mediterranean", August 30th - September 3rd, 2006, Volos, Greece

Provided in Cooperation with:

European Regional Science Association (ERSA)

Suggested Citation: Cortes-Jimenez, Isabel (2006) : Tourism and Economic Growth At Regional Level: the Cases of Spain and Italy, 46th Congress of the European Regional Science Association: "Enlargement, Southern Europe and the Mediterranean", August 30th - September 3rd, 2006, Volos, Greece, European Regional Science Association (ERSA), Louvain-la-Neuve

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Tourism and economic growth at regional level: the cases of Spain and Italy¹

Isabel Cortés-Jiménez²

Research Group 'Anàlisi Quantitativa Regional' (AQR-IREA)

Department of Econometrics, Statistics and Spanish Economy

University of Barcelona

icortes@ub.edu

Abstract

During the last years several papers that provide empirical evidence of the importance of the role of tourism in the economic growth have appeared in the literature. However, they refer to a country or a sample of countries. In this paper, on the contrary, the importance of the expansion of the tourism sector is studied at regional level, that is to say, the relevance of tourism for regional economic growth, within a country. In order to do that, we focus on two of the worldwide countries with respect to tourism: Italy and Spain. In this sense, not only the effect of international tourism is analysed, as it is usual in this type of studies, but also the importance of domestic markets. In addition to analysing the Spanish and Italian regions jointly and separately, we take into account some criteria as, for instance, the geographical location of regions. The period of analysis is from 1990 to 2000. Regarding the methodology, the Arellano-Bond (1991) estimator for dynamic panel data models and the Bruno (2005) finite sample correction are applied. We find that both domestic and international tourism have a significant and positive role in regional economic growth, although each one becomes important in different scenarios. On one hand, domestic tourism is important for the Spanish regions, whilst international tourism is important for the Italian regions. On the other hand, for coastal regions and regions with Mediterranean coast, both domestic and international tourism are important factors, whereas for internal regions only domestic tourism is relevant.

Keywords: economic growth, international tourism, domestic tourism, regions, Spain, Italy

JEL Codes: L83, C23, O11

¹ This study has been done during the six-month research stay at the CRENoS Research Center (Cagliari, Italy) and supervised by Professor Stefano Usai and Professor Rinaldo Brau. The author thanks Adriana Di Liberto and Maria Carme Riera i Prunera for their helpful comments. This research has been financially supported by the Departament d'Universitats, Investigació i Societat de la Informació from the Government of Catalonia and the European Social Funding.

² I am also indebted to the CRENoS Research Center for their kind hospitality.

1 Introduction

The Spanish and the Italian experiences have attracted the attention of researchers and emerging countries because of their successful tourism expansion, being nowadays two of the most important countries around the world regarding international tourism. Among the top ten tourism destinations around the world in 2004, Spain occupies the second position, behind France, whereas Italy maintains firm the fourth position behind United States regarding international tourism receipts. By volume of international arrivals, Spain ranks second after United States and and Italy fifth after France and China³ (World Tourism Organisation⁴, 2005).

It is useful to understand that tourism activity does not only include the international tourism phenomenon. Most studies only analyse international tourism either for the unavailability of suitable data or for undervaluing the importance of domestic tourism. The current fact is that tourism practised by people in their own country is in many cases as relevant as international tourism. European tourism has a very large domestic component and domestic tourism is greater than international tourism both in terms of size and economic contribution (UNWTO, 2002). Hence, in most studies we can find a lack of consideration of domestic tourism. In the present study we take into consideration both types of tourism.

As it is well known, tourism is one of the economic activities with higher capacity to generate employment and attracting investments and foreign capital. In addition, tourism is characterised by generating direct and indirect effects in the local economy. We can argue that it might be considered as a potential tool in the economic growth and development of

³ In 2005, China has experienced an important change in the ranking by international tourist arrivals. This country moved into the 4th position leaving Italy fourth. (UNWTO, 2005).

⁴ Henceforth, UNWTO.

regions inside a country. The potential of tourism is obvious but it is necessary to bear in mind that it is an activity that is continuously changing and it has high dynamicity⁵.

Moving to our cases of study, the distribution of tourism activity in terms of arrivals and overnights both in the Spanish and the Italian case, is characterised by high numbers and a remarkable stability in the rankings of their regions. Based on this evidence, the initial aim is to analyse the evolution of tourism in Spain and Italy, not only at aggregated level but also at regional level, as well as to capture the individual character of them and their regions.

Unlike a number of recent studies analysing the causality between international tourism and economic growth of countries (Balaguer and Cantavella-Jordà, 2002; Dritsakis, 2004; Durbarry, 2004; Oh, 2005; Gunduz and Hatemi-J, 2005), and some others that look at the possible relationship between specialization on tourism and economic growth from an endogenous growth model (Lanza and Pigliaru, 2000; Brau *et al.*, 2003), the present paper attempts to assess whether tourism sector is a relevant factor for economic growth in a convergence context.⁶

The present analysis diverges from the previous studies since we have taken into account the regional dimension of this phenomenon, and looks not only to international tourism, like most studies do, but also to domestic tourism.

Regarding the methodologies applied in this work, Arellano and Bond (1991) dynamic panel data technique⁷ is used. This approach has been used in the convergence growth context by several authors (Islam, 1995; Caselli *et al.*, 1996; Benhabib and Spiegel, 2000;

⁵ Tourism has a high degree of sensibility to extraordinary national or international events. For instance, a positive example could be the Olympic games and for a negative example we can mention any war. A clear example of this sensitivity could be September 11th 2001 in United States. As a consequence, domestic tourism experienced a high growth, while travels abroad dropped.

⁶ We can find some similar attempts, see Eugenio-Martin *et al* (2004), and Neves (2005).

⁷ Henceforth, Arellano-Bond estimator.

Forbes, 2000; Levine *et al.*, 2000). As usual in a macroeconomic context, we work with a small panel of data. In order to attempt avoiding possible problems in the estimation we secondly apply Bruno(2005) finite sample correction for Arellano-Bond estimator.

The paper is organised as follows. The next section describes the evolution and characteristics of tourism activity, at aggregated and at regional level, for Spain and Italy between 1990 and 2000. The third section presents the empirical growth model, based on the previous literature and on the characteristics of the Spanish and Italian economics. This model is the basis for the empirical results in the following sections. Thus, the fourth section explains the methodology used, and fifth one discusses the regression results. The final section summarizes the main results and concludes.

2 General overview of tourism in Spain and Italy

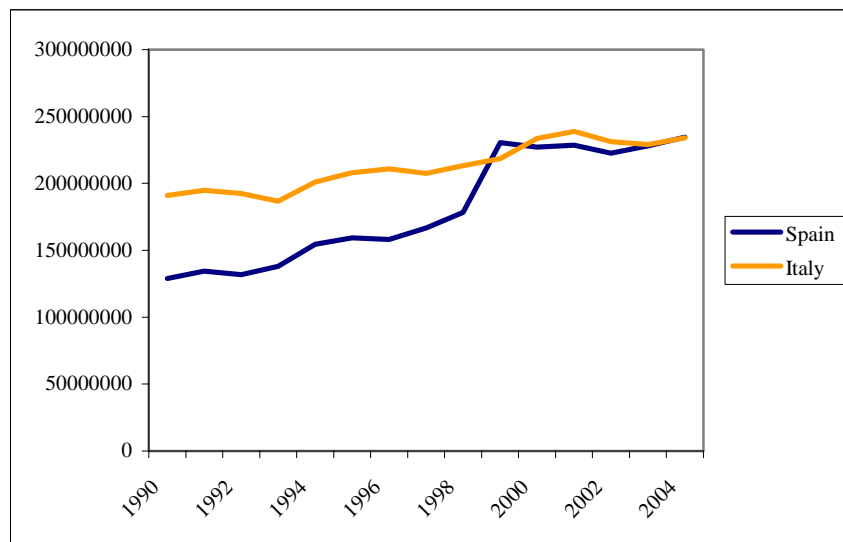
In the present section we investigate the evolution of tourism in Spain and Italy during the last years. First we analyse the relevance of tourism at aggregate level and then, we go into detail by looking at the situation at regional level. In both cases we describe international and domestic tourism evolution. The objective of this section is to identify patterns of both at country level and within these two Mediterranean countries.

As well known, tourism in Spain and Italy has been positive and unstoppable during decades. In fact, nowadays they are two of the most important countries around the world regarding international tourism. Now we analyse which has been the evolution of tourism in terms of arrivals and nights⁸ by residents and non-residents for Spain and Italy at aggregated level, in the period 1990-2004.

⁸ For detailed description of data see Appendix.

The next figure shows a general overview of total nights evolution for Spain and Italy. We can observe that both have growth at different rates and starting from different levels, with Italy having higher numbers than Spain in 1990 and finishing almost at the same level in 2004.

Figure 1. Total nights evolution⁹, 1990-2004



Regarding Spain, if we look to absolute numbers of arrivals and nights, we observe that both of them have grown. What is more, both domestic and international tourism have experienced high growth rates too (see Table 1). Moreover, it is interesting to see how important domestic and international tourism are for the Spanish market. In 1990 it seems that domestic tourism is the most important, however, in 2004, despite having the highest numbers the relevance of international tourism has considerably grown, and international nights became more important than domestic ones (See Table 2).

Table 1. Evolution of arrivals and nights in Spain, 1990-2004.

	Domestic	International	Total
Arrivals	86.9	125.3	101.1
Nights	75.0	87.7	82.1

Note: Numbers in percentages.

⁹ Sum of domestic and international nights spent.

Table 2. Share of domestic and international tourism regarding the total.

	1990			2004		
	Domestic	International	Total	Domestic	International	Total
Arrivals	63.1	36.9	100	58.7	41.3	100
Nights	44.3	55.7	100	42.6	57.4	100

Note: Numbers in percentages.

Regarding Italy, both arrivals and nights have grown in all cases. However, Italian growth rates have been lower than Spanish ones. If we observe evolution of nights, domestic ones have grown much less than international ones, which seem to play the most important role (see Table 3). At the same time, if we look at the structure of Italian tourism market (see Table 4), we observe that the structure has not changed in the period 1990-2004: domestic tourism has slightly higher numbers than international one.

Table 3. Evolution of arrivals and nights in Italy, 1990-2004.

	Domestic	International	TOTAL
Arrivals	20.7	66.9	36.7
Nights	9.4	47.2	22.5

Note: Numbers in percentages.

Table 4. Share of domestic and international tourism regarding the total.

	1990			2004		
	Domestic	International	Total	Domestic	International	Total
Arrivals	65.3	34.7	100	57.7	42.3	100
Nights	65.5	34.5	100	58.5	41.5	100

Note: Numbers in percentages.

At this point, we have seen that the evolution of Spain and Italy at aggregated level, although with its own characteristics, shows an expansion, both regarding domestic and international tourism. It is useful to pay attention to the evolution of international tourism receipts per international arrivals.¹⁰ We find that the numbers are not so high for arrivals and nights. In fact, for Spain, the growth rates are low (nearly zero), showing a slight increase every five years, while Italy has higher growth in the first five-year period, whilst

¹⁰ Data of domestic tourism receipts is not available.

in 2000-2004 suffers a drop (see Table 5). However, in general terms, Italy faces a higher growth of international tourism receipts per tourist. From this fact we can conclude that numbers of arrivals and nights increase, although international tourists spend less money in their destination.

Table 5. Evolution of International Tourism Receipts per tourist¹¹

	1990-95	1995-00	2000-04	1990-2004
Spain	0.12%	0.81%	10.20%	11.24%
Italy	29.82%	10.46%	-7.33%	32.89%

The rest of the paper focuses the attention on the evolution of tourism at regional level. From now on we attempt to identify the characteristics of tourism sector within Spain and Italy. In order to do that, instead of looking at absolute numbers we go into detail using data on nights *per capita*¹². The next two tables show the ranking of international and domestic nights *per capita* respectively, and also the ranking of the evolution of these numbers. As expected, Illes Balears, Canarias, Catalunya, Comunidad Valenciana and Andalucía occupy the higher positions in the rankings at international level, both in 1990 and in 2004. Those are the regions with Mediterranean coast and they have experienced lower increases all period long, since they are mature destinations. However those regions that traditionally had not a developed tourism sector show the highest growth levels, thus showing the interest in taking advantage of the potential of tourism activity (see Table 6). Regarding domestic tourism the situation is as follows: the higher positions occupied almost by the same destinations, Illes Balears experiences a drop by 38.8%; the rest of the destinations increase the number of *per capita* nights (see Table 7). If we now look to all types of tourists at the same time, we detect that international tourism show numbers considerably lower than domestic tourism.

¹¹ Numbers correspond to international tourism receipts per international arrivals.

¹² The reason for using only this data when describing the regional tourism situation, to have chosen since receipts data not available, *per capita* nights as a proxy. For further details on these series see Appendix.

Table 6. Rankings of International Nights in *per capita* terms. Spanish regions.

Ranking nights <i>per capita</i> 1990		Ranking nights <i>per capita</i> 2004		Ranking nights <i>per capita</i> evolution 1990-2004 (%)	
Illes Balears	39.18	Illes Balears	44.15	Galicia	412.5%
Canarias	9.48	Canarias	15.61	La Rioja	355.6%
Catalunya	1.90	Catalunya	3.56	Navarra	333.3%
Comunidad Valenciana	1.30	Andalucía	2.36	Extremadura	242.9%
Andalucía	1.15	Comunidad Valenciana	1.85	Región de Murcia	216.7%
Madrid	0.70	Madrid	1.02	Asturias	216.7%
Cantabria	0.21	Cantabria	0.59	País Vasco	200.0%
Castilla y León	0.17	País Vasco	0.45	Cantabria	181.0%
Aragón	0.16	Castilla y León	0.42	Aragón	150.0%
País Vasco	0.15	Galicia	0.41	Castilla y León	147.1%
Murcia	0.12	La Rioja	0.41	Castilla-la Mancha	136.4%
Castilla-la Mancha	0.11	Aragón	0.40	Andalucía	105.2%
La Rioja	0.09	Navarra	0.39	Catalunya	87.4%
Navarra	0.09	Murcia	0.38	Canarias	64.7%
Galicia	0.08	Castilla-la Mancha	0.26	Madrid	45.7%
Extremadura	0.07	Asturias	0.24	Comunidad Valenciana	42.3%
Asturias	0.06	Extremadura	0.19	Illes Balears	12.7%

Table 7. Ranking of Domestic Nights in *per capita* terms. Spanish regions.

Ranking nights <i>per capita</i> 1990		Ranking nights <i>per capita</i> 2004		Ranking nights <i>per capita</i> evolution 1990-2004 (%)	
Illes Balears	9.71	Illes Balears	5.94	Asturias	131.5%
Islas Canarias	2.62	Canarias	4.23	Galicia	114.8%
Cantabria	1.96	Cantabria	3.57	Andalucía	110.4%
Aragón	1.93	Comunidad Valenciana	2.91	País Vasco	90.8%
Comunidad Valenciana	1.81	Aragón	2.78	Cantabria	82.4%
La Rioja	1.32	Andalucía	2.69	La Rioja	78.8%
Castilla y León	1.29	Galicia	2.45	Castilla y León	76.2%
Andalucía	1.28	La Rioja	2.36	Catalunya	62.6%
Catalunya	1.25	Castilla y León	2.27	Castilla-La Mancha	62.2%
Madrid	1.22	Asturias	2.25	Islas Canarias	61.5%
Galicia	1.14	Catalunya	2.03	Comunidad Valenciana	61.0%
Murcia	1.13	Navarra	1.71	Navarra	59.7%
Navarra	1.07	Murcia	1.63	Extremadura	54.8%
Asturias	0.97	Extremadura	1.49	Murcia	44.2%
Extremadura	0.96	Castilla-la Mancha	1.48	Aragón	44.2%
Castilla-La Mancha	0.91	Madrid	1.30	Madrid	6.2%
País Vasco	0.58	País Vasco	1.11	Illes Balears	-38.8%

Regarding the Italian case, Bolzano-Bozen and Trento, Valle d'Aosta, Veneto and Toscana rank the highest positions at international level, both in 1990 and in 2004. Similarly Spanish areas (as...nombrar) these rank the lowest positions regarding all period growth. Why it is so is an interesting question we would like to address to. We believe that it can be due to the maturity of these destinations, whereas those regions that adress to traditionally

did not have a developed tourism sector are now facing their highest growth levels, hence showing the interest of development their tourism sector (see Table 8).

Table 8. Rankings of International Nights in *per capita* terms. Italian regions.

Ranking nights <i>per capita</i> 1990		Ranking nights <i>per capita</i> 2004		Ranking nights <i>per capita</i> evolution 1990-2004	
Bolzano-Bozen & Trento	14.78	Bolzano-Bozen & Trento	17.39	Basilicata	490.4%
Valle d'Aosta	3.71	Valle d'Aosta	6.85	Calabria	446.5%
Veneto	2.49	Veneto	3.28	Molise	167.9%
Toscana	1.89	Toscana	2.82	Sardegna	143.3%
Liguria	1.73	Lazio	2.58	Puglia	92.9%
Lazio	1.61	Liguria	1.86	Valle d'Aosta	84.7%
Emilia-Romagna	1.26	Emilia-Romagna	1.60	Lombardia	80.8%
Friuli-Venezia Giulia	0.84	Sardegna	1.31	Piemonte	64.5%
Campania	0.75	Friuli-Venezia Giulia	1.23	Sicilia	62.5%
Umbria	0.74	Lombardia	1.08	Lazio	60.0%
Lombardia	0.60	Campania	1.06	Marche	52.2%
Sardegna	0.54	Umbria	1.01	Toscana	49.0%
Sicilia	0.54	Sicilia	0.88	Friuli-Venezia Giulia	46.0%
Marche	0.47	Marche	0.72	Abruzzo	44.5%
Piemonte	0.38	Piemonte	0.63	Campania	41.9%
Abruzzo	0.33	Calabria	0.49	Umbria	36.3%
Puglia	0.11	Abruzzo	0.48	Veneto	31.6%
Calabria	0.09	Basilicata	0.30	Emilia-Romagna	27.1%
Molise	0.05	Puglia	0.21	Bolzano-Bozen & Trento	17.7%
Basilicata	0.05	Molise	0.13	Liguria	7.4%

Table 9. Rankings of Domestic Nights *per capita*. Italian regions.

Ranking nights <i>per capita</i> 1990		Ranking nights <i>per capita</i> 2004		Ranking nights <i>per capita</i> evolution 1990-2004	
Valle d'Aosta	17.63	Bolzano-Bozen & Trento	15.18	Basilicata	179.4%
Bolzano-Bozen & Trento	14.60	Valle d'Aosta	12.90	Calabria	120.8%
Liguria	5.78	Emilia-Romagna	5.50	Molise	90.3%
Emilia-Romagna	5.22	Liguria	4.69	Abruzzo	44.3%
Toscana	3.29	Abruzzo	3.35	Sardegna	41.4%
Umbria	2.65	Marche	3.15	Campania	39.9%
Marche	2.52	Sardegna	3.14	Puglia	34.9%
Veneto	2.40	Toscana	2.83	Sicilia	33.5%
Abruzzo	2.32	Umbria	2.82	Marche	25.0%
Sardegna	2.22	Calabria	2.47	Lazio	19.3%
Friuli-Venezia Giulia	1.90	Veneto	2.38	Umbria	6.4%
Lazio	1.56	Basilicata	1.90	Emilia-Romagna	5.4%
Lombardia	1.35	Lazio	1.86	Bolzano-Bozen & Trento	4.0%
Calabria	1.12	Friuli-Venezia Giulia	1.68	Veneto	-0.7%
Campania	1.03	Molise	1.48	Lombardia	-10.7%
Sicilia	1.02	Campania	1.44	Friuli-Venezia Giulia	-11.6%
Piemonte	0.99	Sicilia	1.36	Piemonte	-12.3%
Puglia	0.88	Lombardia	1.21	Toscana	-14.0%
Molise	0.78	Puglia	1.19	Liguria	-18.9%
Basilicata	0.68	Piemonte	0.87	Valle d'Aosta	-26.8%

With respect to domestic tourism, the highest positions in 1990 and in 2004 are mostly occupied almost by the same destinations in terms of international tourism but with lower numbers (See Table 8 and Table 9). Regarding evolution of domestic nights *per capita*, we find that seven regions have experienced a drop, performing the worst Valle d'Aosta (see Table 9). Looking at all types of tourism, we detect that international tourism shows numbers considerably lower than domestic tourism.

At this point, we have a general knowledge of the current situation and the evolution of tourism in Spain and Italy at aggregated level, not only looking at international level but at domestic one. We have also observed the regional characteristics of tourism for Spain and Italy. So, although Spain and Italy are two tourism developed countries, with both large domestic and international markets, when looking inside the countries we find large differences. As expected, more specifically, we find mature destinations with high numbers of nights *per capita*, however, we also find those less 'touristy' regions, which are the ones that face the highest increases.

3 An empirical model of economic growth with tourism

Throughout the economic growth literature, researchers have been interested in the rate at which regions and countries close the gap between their current positions and their respective steady states. And, they have also tried to analyze which economic variables are relevant to this process. In our context, convergence economic growth literature becomes relevant (Barro, 1991; Barro and Sala-i-Martin, 1992; 2004). Convergence applies if a poor economy tends to grow faster than a rich one, so that the poor country tends to catch up with the rich one in terms of the level of per capita income or product; that is the β -convergence concept. The next expression shows the growth rate of per capita income¹³:

¹³ See also Barro and Sala-i-Martin (2004).

$$\log(y_{it}) - \log(y_{it-1}) = \alpha - \beta \log(y_{it-1}) + u_{it} \quad [1]$$

where:

α is the steady state; β is the speed of convergence, $|\beta| < 1$ means convergence between countries or regions, bigger β corresponds to a higher tendency to convergence; u_{it} is an error term.

As Temple (1999) explains, Mankiw, Romer and Weil (1992) work provides a simple theoretical framework for growth regressions. The most common approach, though, is simply to use a more or less *ad hoc* regression. Hence, according to the literature, model [1] can be extended in this way:

$$\log(y_{it}) - \log(y_{it-1}) = \alpha - \beta \log(y_{it-1}) + \delta X_{it} + u_{it} \quad [2]$$

where y_{it} denotes log *per capita* Gross Domestic Product (from now on, GDP) in region i in year t , X_{it} is a vector of variables measured in year t (such as the rates of investment, population growth, human capital indicators or government expenditure). In fact, regressions of this type are sometimes known as “Barro regressions”, after Barro (1991).

The sources of growth most widely analysed in the literature have been investment in physical capital and human capital as Temple (1999) explain. Moreover, there are variables that exert a strong influence on growth, such as population growth, trade, finance, short-run macroeconomics.¹⁴

At this point, in the present work we introduce the influence of tourism as another possible relevant factor. We could think of the ideal variable to include as the ratio of tourism receipts to GDP. However, we face a problem of non-availability of data. Despite this fact, we have a considerable wide availability of data, within to choose the best proxy.

¹⁴ See Temple (1999), Barro and Lee (1994) and Barro (1991).

The set of possible variables includes nights and arrivals, both available for residents and non-residents. They can be used in absolute numbers or in *per capita* terms, as well as in levels or in growth rates. Among all these possibilities, the indicator we have chosen was nights *per capita* for domestic and international tourism. Likewise arrivals *per capita* –instead of nights *per capita*– are also included in the regression since most tourism studies take it as a proxy¹⁵.

Therefore, the specification of the model in this work is as follows:

$$LGDP_PC_{it} = \beta LGDP_PC_{i(t-1)} + X'_{it}\delta + \eta_i + v_{it} \quad [3]$$

$i=1...N$, where i denotes the number of regions considered,

$t=1...T$, where t denotes time period,

η_i is a region effect that may represent differences in technology,

v_{it} is the error term, region-specific time-varying shock in year t ,

$LGDP_PC$ is the natural logarithm of *per capita* GDP,

X is a vector of variables¹⁶:

- I_Y : ratio of investment to GDP,

- KH_M, KH_H : human capital indicators proxied by share of population with medium and high levels of education (KH_M for medium level, KH_H for high level),

- G_Y : ratio of government consumption to GDP,

- NR_PC, NI_PC : tourism variables proxied by nights spent by residents, as a indicator of domestic tourism, and nights spent by non-residents, as a indicator of international tourism in *per capita* terms, (NR_PC, NI_PC respectively)

¹⁵ Probably due to availability of data.

¹⁶ The final set of explanatory variables has been conditioned by data availability at the regional level for the period under analysis. See the Appendix for a detailed description of the data.

- AR_{PC} , AI_{PC} : we also introduce in a different regression domestic and international arrivals in *per capita* terms, respectively, instead of nights,.

In the present work, we analyse regions from two different countries: Spain and Italy. Barro and Sala-i-Martin (2004) test the convergence predictions of the neoclassical growth model by looking at the behaviour of regions within countries. Although differences in technology, preferences, and institutions do exist across regions, these differences are likely to be smaller than those across countries. Firms and households of different regions within a single country tend to have access to similar technologies and have roughly similar tastes and cultures. Furthermore the regions share a common central government and therefore have similar institutional setups and legal systems. This relative homogeneity means that absolute convergence is more likely to apply across regions within countries than across countries. Another consideration in this study at regional level is that inputs tend to be more mobile across regions than across countries. The reason being that legal, cultural, linguistic, and institutional barriers to factor movements tend to be smaller across regions within a country than across countries.

4 Methodology

In this section the applied methodologies are explained referring directly to our context of economic growth and convergence. As mentioned before, panel data techniques are chosen. The advantages of using panel data techniques to study growth are several. As Temple (1999) remarks: (i) they allow us to control for omitted variables that are persistent over time, (ii) in a panel data framework, we can at least control for unobserved heterogeneity at the initial level of efficiency in conditional convergence regressions, (iii) another advantage is that several lags of the regressors can be used as instruments when required, thus alleviating measurement error and endogenous biases.

Caselli, Esquivel and Lefort (1996) use a generalized method of moments¹⁷ to estimate a dynamic panel data model. The growth model is first differenced to eliminate the effect of initial efficiency, then lags of the variables are used as instruments. This is Arellano-Bond estimator. In the present work, one-step Arellano-Bond estimator is applied¹⁸. It is suitable since it has the advantage of producing consistent estimates in a dynamic panel regression with endogenous right hand side variables.

Given the presence of cyclical effects, researchers face some difficult choices in choosing the time intervals for their studies. Whether it is best using annual data, or five- or ten-year averages to avoid business cycle effects, is a question that remains largely unsettled. If annual data is used, one must take great care in modelling the short-run dynamics, especially as some heterogeneity is inevitable. In this paper we use annual data and also include year dummies in all regressions.

As argued by Caselli *et al.* (1996), except for indicators of a country's geography and climate, strict exogeneity assumptions do not seem very useful in the growth context. Variables like investment rate or population growth rate may be potentially both effects and causes of economic growth. For this reason, in the present work, investment ratio and population growth are considered not only predetermined but endogenous variables.

It is worth mentioning that Arellano-Bond estimator shows one weakness. Its properties hold only for N large, so they can be biased and imprecise in panel data with a small number of cross-sectional units, such as most macro panels. And the same occurs with the other known estimators for dynamic panel data model (i.e. Anderson and Hsiao (1981) and Blundell-Bond (1998) estimator). In this situation, an alternative approach based on the

¹⁷ Henceforth, GMM.

¹⁸ Two-step standard errors tend to be biased downwards in small samples.

bias-correction of the least square dummy variables estimator¹⁹ has recently gained popularity in the econometric literature. Kiviet (1995) put forward a more direct approach to the problem of the LSDV finite sample bias by estimating a small sample correction to the LSDV estimator. Kiviet (1995) estimator corrects the bias only in the LSDV estimated parameters, it does not produce alternative or corrected standard errors. Bruno (2005) undertakes the corrected LSDV²⁰. In Bruno (2004), a Stata routine is presented²¹. This author specifies in the estimation on STATA which consistent estimator among three possibilities to choose to initialize the bias correction. We choose Arellano-Bond estimator. Bruno estimates upon theoretical approximation formulas and estimating a bootstrap variance covariance matrix for the corrected estimator. Therefore, in the present work Bruno (2005) LSDVC bias correction for Arellano-Bond estimator is also applied.²²

5 Results

From [2] and the collection of variables described, the equation to be estimated for each of the sub-samples is as follows:

$$\begin{aligned} \text{LGDP_PC}_{it} = & \beta \text{LGDP_PC}_{i(t-1)} + \delta_1 \text{I_Y}_{it} + \delta_2 \text{KH_M}_{it} + \delta_3 \text{KH_H}_{it} + \delta_4 \text{G_Y}_{it} \\ & + \delta_5 \text{G_POP}_{it} + \delta_6 \text{NR_PC}_{it} + \delta_7 \text{NI_PC}_{it} + \eta_i + \nu_{it} \end{aligned} \quad [4]$$

where $|\beta| < 1$, ν_{it} are i.i.d. over the whole sample with variance σ_v^2 . It is also assumed that the η_i and the ν_{it} are independent for each i over all t . The equation [4] is estimated both with arrivals and nights as previously explained. Moreover, only for the Italian case, government expenditure is included in the regression. In the rest of the cases it is not included due to the unavailability of these data for the Spanish regions.

¹⁹ From now, LSDV.

²⁰ From now on, LSDVC. It is computed to STATA 9.0.

²¹ Bruno's work appeared in 2004 in a working paper of the Università Bocconi. It was published in 2005.

²² But with a strictly exogenous selection rule.

The expression [4] will be estimated for different sub-groups of regions. First, we will estimate this expression for Spanish and Italian regions, separately and together. Second, we bear in mind that tourism activity is usually positively influenced by their geographical advantages. Thus, we take into account in this study geographical location criteria. We will estimate expression [4] for coastal regions, internal regions and regions with Mediterranean coast.

The unknown coefficients are estimated first using the Arellano-Bond estimator; therefore, first-difference equation [4] to remove out the individual effects, η_i . After doing this, we get an equation that is estimable by instrumental variables. Arellano and Bond (1991) derived a GMM estimator using lagged levels of the dependent variable and the predetermined variables, as well as differences of the strictly exogenous variables²³. There is one concern about the exogeneity of the right-hand side variables, that is investment ratio and population growth, as argued in the previous section. They are included in the regression as endogenous, meaning $E[x_{it}, v_{is}] \neq 0$ for all $s > t$.²⁴ Whereas the rest of the variables are treated as strictly exogenous, $E[x_{it}, v_{is}] = 0$ for all t and s .²⁵

Regarding the use of Arellano-Bond estimator, including variables as endogenous, as in this case, increases the size of the instrumental matrix very quickly. This can generate problems when dealing with a very large instrument matrix, since GMM estimators with too many over-identifying restrictions may perform poorly in small samples²⁶. Hence, Bruno (2005) finite sample bias correction is also applied, as explained before.

²³ For more details, see Arellano (2003).

²⁴ Endogenous variables are treated similarly to the lagged dependent variables. Levels of the endogenous lagged variables are available to serve as instruments.

²⁵ Domestic tourism variables could be considered as endogenous variables. However, due to the small size of the panel, we need to adopt the assumption of strictly exogeneity for this variable in order to avoid problems in the estimation.

²⁶ See Kiviet (1995) and Bruno (2005).

Arellano-Bond methodology assumes there is no second-order autocorrelation in the errors. Besides, the Sargan test for over-identifying restrictions as derived by Arellano and Bond (1991) is also provided²⁷. Failure to reject the null hypothesis in both tests gives support to the models. This happens in all our estimates by Arellano-Bond estimator. Therefore, the model seems to be correctly specified.²⁸

It is worth to remark that the results were quite robust to specifications in which variables with non-significant coefficients were removed from the list of regressors. Coefficient estimates experienced only minor changes.

As mentioned before, the estimations are done for different groups of regions. The two classifications and the subgroups are shown in Figure 1.

Figure 1. Subgroups of regions

I. By Countries	<table> <tr> <td>I.1. Spanish regions</td><td>N=17</td></tr> <tr> <td>I.2. Italian regions</td><td>N=20</td></tr> <tr> <td>I.3. Both countries together</td><td>N=37</td></tr> </table>	I.1. Spanish regions	N=17	I.2. Italian regions	N=20	I.3. Both countries together	N=37
I.1. Spanish regions	N=17						
I.2. Italian regions	N=20						
I.3. Both countries together	N=37						
II. By Geographical Location Criteria	<table> <tr> <td>II.1. Coastal regions</td><td>N=24</td></tr> <tr> <td>II.2. Internal regions</td><td>N=13</td></tr> <tr> <td>II.3. Regions with Mediterranean coast</td><td>N=14</td></tr> </table>	II.1. Coastal regions	N=24	II.2. Internal regions	N=13	II.3. Regions with Mediterranean coast	N=14
II.1. Coastal regions	N=24						
II.2. Internal regions	N=13						
II.3. Regions with Mediterranean coast	N=14						

Next, we go on with detailed explanation of the results for each of these cases.

I. By countries.

Starting with the estimations for Spain and Italy, separately and jointly (See Table I.1, Table I.2. and Table I.3, respectively). The parameter associated with LGDP_PC(t-1) is positive and less than one for both estimators, so the model guarantees the existence of

²⁷ Named 'm2' and 'Sargan' in tables of results.

²⁸ All the estimations have been obtained with STATA 9.0.

convergence. The rest of the variables take the expected signs, all of them being significant. Investment ratio has a positive influence, population growth has a negative one, human capital indicators have a positive sign too. For the Italian case, it is also found a negative sign for government consumption ratio, whereas human capital only at high level of education is significant and with positive sign. Regarding the estimation of both countries jointly (see Table I.3.), we find similar results. However, investment ratio presents some problems. This can be due to puzzling different datasets (See Barro and Sala-i-Martin, 2004).²⁹ Here an additional reason could be that the share of investment variable is calculated including public investments. As argued in DiLiberto *et al* (2005) public investments in Italy represent the largest component and the allocation of public investments has not been governed by efficiency criteria³⁰.

With respect to the tourism variables, we observe two different settings. For Spanish regions it seems that domestic tourism plays a relevant role, whilst for Italian regions, international tourism is the important one. Both of them have positive coefficients³¹. These results are interesting since they allows us first to consider tourism as a relevant factor; and second, to capture different influences. As regards both countries jointly, we find domestic tourism exerting a positive and significant influence of growth whilst international one does not. In fact, it could be reasonable if we look how important the domestic component of tourism activity is in the period analysed.³²

II. By Geographical Location Criteria.

Looking at the second classification according to being coastal, internal regions or having Mediterranean coast (Table II.1, Table II.2 and Table II.3, respectively), the parameter

²⁹ In this sense, we face also the difficulty in mixing data from national databanks.

³⁰ See Paci and Pigliaru (1995) and Boltho *et al.* (1997) among others.

³¹ Since we find high correlation between domestic and international tourism indicators, the estimations are done separately (see Table 2).

³² In the second section of the present work we made a descriptive analysis of domestic and international tourism in Spanish and Italian regions. We find that domestic tourism is larger than international one.

associated with $LGDP_PC(t-1)$ is positive and less than one, as expected in a convergence growth model. When studying tourism activity we have to bear in mind that certain *a priori* conditions help to attract tourists³³. We find evidence for both domestic and international tourism as being relevant factors for coastal regions economic growth. Nevertheless, for internal regions only domestic tourism appears to be important. In these regressions Spanish and Italian regions are mixed, hence we continue facing the problem in the investment ratio. Regarding internal regions, we find that only one human capital indicator is significant. Specifications in which variables with non-significant coefficients were removed show the same results. That is, the coefficient β , one human capital indicator and domestic tourism are significant.

A final estimation was done for those regions having Mediterranean coast. We can say that these regions are those with more geographical advantages and also climatological ones towards tourism. It is well known that ‘sun and sand’ tourism had a large power of attracting tourists. In fact, in section two we have observed that those regions which higher numbers in nights in *per capita* terms were the Mediterranean coastal ones. Consequently they are really those with a more developed tourism activity. The results of the estimation in this case are quiet interesting because we find that both domestic and international tourism estimators are positive and significant. In addition to finding all variables significant, except the investment ratio (due to problems mentioned above), for regions with Mediterranean coast, both domestic and international tourism are significant. What is more, only for these regions with Mediterranean coast total tourism *per capita* growth rate³⁴ appears as significant.

The next figure summarises all the results regarding the significance of tourism indicators.

³³ Among these conditions, we could mention having coast, beaches or favourable climate conditions.

³⁴ Defined as the domestic and international tourism in per capita terms, and calculated in growth terms instead of levels.

Figure 2. Summary table

	Domestic Tourism	International Tourism
Spain	√	
Italy		√
Both Countries	√	
Coastal regions	√	√
Internal regions	√	
Mediterranean coast regions	√	√

6 Conclusions

This paper attempts to detect if tourism activity may be considered as a relevant factor in a growth convergence context. In order to to analyse this fact we consider two of the most important countries around the world regarding tourism: Spain and Italy. This paper has two important contributions: first, this work has not limited to international tourism, as it is usual in the literature. Here both domestic and international tourism are considered . Second, this is a regional work meaning that takes into account the regional dimension of Spain, Italy and both countries together. Additionally, we bear in mind that the geographical location can be important for the regions and for the development of tourism activity. So, this research has also been undertaken for sub-groups of regions: coastal regions, internal regions and regions with Mediterranean coast.

Regarding the methodology, Arellano-Bond (1991) estimator for dynamic panel data models and Bruno (2005) LSDV bias correction for Arellano-Bond has been applied. The findings are substantially robust to changes in the estimator adopted.

The most important results reveal that, on the one hand, domestic tourism is found to be a relevant economic factor for Spain, whereas international tourism seems to be the important one for Italy. On the other hand, for coastal regions we find evidence that both domestic and international tourism are important, whilst in internal regions domestic

tourism appears as the only important. Finally, for those regions with Mediterranean coast, both domestic and international tourism are important and, even more, it is the unique case for which growth rate of tourism is significant.

Therefore, we may consider that tourism activity, if well oriented, can become a key factor in the economic growth of countries, and what is more important, for its regional growth. We have seen that the geographical location and the climatological advantages are a great advantage to develop the tourism sector and to attract tourists. However, the rest of regions might direct its tourism politics to domestic tourism. In fact, we have observed how important domestic tourism can be looking at Spain and Italy. Consequently, emerging countries should regard Spain and Italy as an example to follow in the sense of taking advantage of their tourism expansion in order to purpose growth and development. This is one of our further line of research, to study the economic contribution of tourism activity and how it can play a relevant play in the economic development of emerging countries and their regions.

7 References

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APPENDIX

I. By countries

Table I.1. Spain

	[1]	[2]	[3]	[4]	[5]
Dependent variable: LGDP_PC					
	GMM-AB	GMM-AB	GMM-AB	LSDVC	LSDVC
LGDP_PC	0.764	0.797	0.757	0.857	0.852
(t-1)	(0.000)***	(0.000)***	(0.000)***	(0.000)***	(0.000)***
	0.037	0.027	0.050	0.085	0.087
I_Y	(0.044)**	(0.058)*	(0.031)**	(0.088)*	(0.038)**
	0.198	0.150	0.169	0.035	0.020
KH_M	(0.006)***	(0.029)**	(0.015)**	(0.330)	(0.683)
	0.713	0.700	0.809	0.451	0.516
KH_H	(0.003)***	(0.004)***	(0.001)***	(0.000)***	(0.000)***
	-0.416	-0.593	-0.321	-0.593	-0.569
G_POP	(0.195)	(0.092)*	(0.441)	(0.240)	(0.291)
	0.003			0.002	
NR_PC	(0.044)**			(0.030)**	
		-0.0003		-0.0004	
NI_PC		(0.458)		(0.331)	
			0.016		0.010
AR_PC			(0.029)**		(0.073)*
			-0.001		-0.003
AI_PC			(0.708)		(0.204)
Sargan	0.93	0.93	0.94		
m2	0.74	0.65	0.83		
N=17					
Correlation (NR_PC, NI_PC)=0.89					
Correlation (NR_PC, NI_PC)=0.55					

Significant at *** 1, ** 5, * 10%, respectively (p-values reported in parenthesis).

Sargan is a test of the over-identifying restrictions for the GMM estimators. P-values are reported.

m2 is the test for second-order serial correlation, asymptotically N(0,1). P-values are reported.

GMM-AB indicates one-step Arellano-Bond estimator.

LSDVC indicates Bruno (2005) bias correction.

Year dummies included in all models.

Table I.2. Italy

	[6]	[7]	[8]	[9]	[10]	[11]
Dependent variable: LGDP_PC						
	GMM-AB	GMM-AB	GMM-AB	GMM-AB	LSDVC	LSDVC
LGDP_PC	0.877	0.871	0.877	0.870	0.867	0.864
(t-1)	(0.000)***	(0.000)***	(0.000)***	(0.000)***	(0.000)***	(0.000)***
	0.053	0.058	0.054	0.052	0.020	0.021
I_Y	(0.013)**	(0.005)***	(0.012)**	(0.012)**	(0.292)	(0.259)
	0.074	0.049	0.080	0.043	0.135	0.127
KH_M	(0.312)	(0.488)	(0.260)	(0.549)	(0.048)**	(0.058)*
	0.427	0.444	0.444	.405	0.389	0.399
KH_H	(0.027)**	(0.015)**	(0.019)**	(0.029)**	(0.024)**	(0.021)**
	-0.471	-0.450	-0.472	-0.466	-0.404	-0.395
G_POP	(0.000)***	(0.001)***	(0.000)***	(0.000)***	(0.000)***	(0.000)***
	-0.014	-0.016	-0.014	-0.015	-0.013	-0.014
G_Y	(0.000)***	(0.000)***	(0.000)***	(0.000)***	(0.000)***	(0.000)***
	-0.001				-0.0006	
NR_PC	(0.477)				(0.696)	
		0.002				0.001
NI_PC		(0.034)**				(0.030)**
			-0.005			
AR_PC			(0.377)			
				0.013		
AI_PC				(0.042)**		
Sargan	0.34	0.30	0.35	0.30		
m2	0.20	0.26	0.22	0.22		
N=20						
Correlation (NR_PC, NI_PC)=0.76						
Correlation (NR_PC, NI_PC)=0.68						

Significant at *** 1, ** 5, * 10%, respectively (p-values reported in parenthesis).

Sargan is a test of the over-identifying restrictions for the GMM estimators. P-values are reported.

m2 is the test for second-order serial correlation, asymptotically N(0,1). P-values are reported.

GMM-AB indicates one-step Arellano-Bond estimator.

LSDVC indicates Bruno (2005) bias correction.

Year dummies included in all models.

Table I.3. Both countries

	[12]	[13]	[14]	[15]
Dependent variable: LGDP_PC				
	GMM-AB	GMM-AB	LSDVC	LSDVC
LGDP_PC	0.888	0.892	0.909	0.910
(t-1)	(0.000)***	(0.000)***	(0.000)***	(0.000)***
	0.003	0.0003	0.009	0.013
I_Y	(0.900)	(0.992)	(0.678)	(0.571)
	-0.061	-0.075	-0.057	-0.068
KH_M	(0.219)	(0.134)	(0.139)	(0.075)*
	0.505	0.480	0.332	0.333
KH_H	(0.013)**	(0.017)**	(0.042)**	(0.040)**
	-0.603	-0.649	-0.667	-0.690
G_POP	(0.000)***	(0.000)***	(0.000)***	(0.000)***
	0.002		0.001	
NR_PC	(0.088)*		(0.037)**	
	0.0001		0.00006	
NI_PC	(0.801)		(0.871)	
		0.008		0.006
AR_PC		(0.100)*		(0.056)*
		0.0006		0.0001
AI_PC		(0.844)		(0.964)
Sargan	0.20	0.20		
m2	0.75	0.74		
N=37				
Correlation (NR_PC, NI_PC)=0.45				
Correlation (NR_PC, NI_PC)=0.42				

Significant at *** 1, ** 5, * 10%, respectively (p-values reported in parenthesis).

Sargan is a test of the over-identifying restrictions for the GMM estimators. P-values are reported.

m2 is the test for second-order serial correlation, asymptotically N(0,1). P-values reported.

GMM-AB indicates one-step Arellano-Bond estimator.

LSDVC indicates Bruno (2005) bias correction.

Year dummies included in all models.

II. By Geographical Location Criteria

Table II.1. Coastal regions

	[16]	[17]	[18]	[19]
Dependent variable: LGDP_PC				
	GMM-AB	GMM-AB	LSDVC	LSDVC
LGDP_PC	0.895	0.884	0.919	0.907
(-1)	(0.000)***	(0.000)***	(0.000)***	(0.000)***
	-0.011	-0.023	-0.017	-0.025
I_Y	(0.676)	(0.405)	(0.456)	(0.256)
	0.166	0.125	0.144	0.108
KH_M	(0.000)***	(0.008)***	(0.000)***	(0.005)***
	0.116	0.191	-0.063	0.017
KH_H	(0.602)	(0.394)	(0.758)	(0.932)
	-0.511	-0.606	-0.562	-0.642
G_POP	(0.000)***	(0.000)***	(0.000)***	(0.000)***
	0.004		0.003	
NR_PC	(0.001)***		(0.001)***	
	0.0008		0.0007	
NI_PC	(0.019)**		(0.037)**	
		0.029		0.027
AR_PC		(0.000)***		(0.000)***
		0.006		0.006
AI_PC		(0.010)***		(0.004)***
<hr/>				
Sargan	0.17	0.36		
m2	0.90	0.73		
<hr/>				
N=24				
Correlation (NR_PC, NI_PC)=0.11				
Correlation (NR_PC, NI_PC)=0.17				

Significant at *** 1, ** 5, * 10%, respectively (p-values reported in parenthesis).

Sargan is a test of the over-identifying restrictions for the GMM estimators. P-values are reported.

m2 is the test for second-order serial correlation, asymptotically N(0,1). P-values are reported.

GMM-AB indicates one-step Arellano-Bond estimator.

LSDVC indicates Bruno (2005) bias correction.

Year dummies included in all models.

Table II.2. Internal regions

	[20]	[21]	[22]	[23]
Dependent variable: LGDP_PC				
	GMM-AB	GMM-AB	LSDVC	LSDVC
LGDP_PC	0.890	0.891	0.939	0.942
(-1)	(0.000)***	(0.000)***	(0.000)***	(0.000)***
	0.029	0.013	0.038	0.028
I_Y	(0.379)	(0.675)	(0.252)	(0.400)
	0.097	0.010	-0.011	-0.008
KH_M	(0.224)	(0.210)	(0.897)	(0.924)
	0.429	0.435	0.318	0.304
KH_H	(0.062)*	(0.062)*	(0.100)*	(0.123)
	-0.152	-0.126	-0.389	-0.358
G_POP	(0.611)	(0.681)	(0.178)	(0.230)
	0.004		0.004	
NR_PC	(0.010)**		(0.010)**	
	-0.001		-0.001	
NI_PC	(0.496)		(0.426)	
		0.012		0.013
AR_PC		(0.012)**		(0.014)**
		-0.015		-0.017
AI_PC		(0.051)*		(0.037)**
<hr/>				
Sargan	0.96	0.97		
m2	0.54	0.50		
N=13				
Correlation (NR_PC, NI_PC)=0.18				
Correlation (NR_PC, NI_PC)=0.40				

Significant at *** 1, ** 5, * 10%, respectively (p-values reported in parenthesis).

Sargan is a test of the over-identifying restrictions for the GMM estimators. P-values are reported.

m2 is the test for second-order serial correlation, asymptotically N(0,1). P-values are reported.

GMM-AB indicates one-step Arellano-Bond estimator.

LSDVC indicates Bruno (2005) bias correction.

Year dummies included in all models.

Table II.3. Regions with Mediterranean coast

	[24]	[25]	[26]	[27]
Dependent variable: LGDP_PC				
	GMM-AB	GMM-AB	LSDVC	LSDVC
LGDP_PC	0.831	0.830	0.869	0.857
(-1)	(0.000)***	(0.000)***	(0.000)***	(0.000)***
	-0.0315	-0.039	-0.023	-0.035
I_Y	(0.338)	(0.228)	(0.392)	(0.172)
	0.705	0.155	0.158	0.136
KH_M	(0.029)**	(0.003)***	(0.002)***	(0.004)***
	0.185	0.603	0.352	0.322
KH_H	(0.000)***	(0.061)**	(0.218)	(0.234)
	-0.400	-0.494	-0.440	-0.519
G_POP	(0.000)***	(0.000)***	(0.000)***	(0.000)***
	0.002		0.003	
NR_PC	(0.027)**		(0.004)***	
	0.0009		0.0008	
NI_PC	(0.008)***		(0.010)**	
		0.027		0.032
AR_PC		(0.002)***		(0.000)***
		0.007		0.006
AI_PC		(0.004)***		(0.006)***
Sargan	0.52	0.66		
m2	0.68	0.51		
N=14				
Correlation (NR_PC, NI_PC)=0.12				
Correlation (NR_PC, NI_PC)=0.17				

Significant at *** 1, ** 5, * 10%, respectively (p-values reported in parenthesis).

Sargan is a test of the over-identifying restrictions for the GMM estimators. P-values are reported.

m2 is the test for second-order serial correlation, asymptotically N(0,1). P-values are reported.

GMM-AB indicates one-step Arellano-Bond estimator.

LSDVC indicates Bruno (2005) bias correction.

Year dummies included in all models.

Data description and sources

Regarding Italian data, data on GDP at current prices, investment at current prices, government consumption and population for Italy were obtained from the REGIO dataset from CRENoS regional databank. Second, series of Italian human capital (population with different levels of education) were taken from ISTAT (Italian Statistical Office). Regarding Spanish data, GDP at current prices and population with different levels of education were obtained from INE (Spanish Statistical Office). Total investment at current prices and population was obtained from BDMores Database. Finally, regarding tourism indicators, arrivals by residents and non-residents and nights spent by residents and non-residents in hotels and similar establishments were obtained from EUROSTAT regional dataset.

Regional unit of analysis

The present definition of a ‘region’ corresponds to the level 2 of the Nomenclature of Territorial Units for Statistics (NUTS) of EUROSTAT. There are 20 Italian regions. Spain has 19 regions, although Ceuta and Melilla are not considered in the present study. Thus, only 17 regions are taken into account.

List of regions in subgroups (according to geographical location criteria):

Internal regions: Aragón, Castilla y León, Castilla-la Mancha, Madrid, Extremadura, La Rioja, Navarra, Umbria, Valle d’Aosta, Piemonte, Lombardia, Trentino-Alto Adige, Basilicata.

Coastal regions: Andalucía, Asturias, Canarias, Cantabria, Catalunya, Comunidad Valenciana, Galicia, Illes Balears, País Vasco, Murcia, Sardegna, Sicilia, Liguria, Toscana, Campania, Veneto, Emilia-Romagna, Marche, Abruzzo, Molise, Puglia, Lazio, Calabria.

Regions with Mediterranean coast: Catalunya, Comunidad Valenciana, Murcia, Andalucía, Illes Balears, Canarias³⁵, Sardegna, Sicilia, Liguria, Toscana, Campania, Lazio, Calabria, Umbria.

³⁵ Although Canarias have not Mediterranean coast, since in this group we bear in mind geographical and climatological advantages towards tourism, this region is included.