The regional public spending for tourism in Italy: an empirical analysis

Cellini, Roberto and Torrisi, Gianpiero

Università di Catania, Facoltà di Economia, University of Newcastle upon Tyne, Center for Urban and Regional Development Studies (CURDS)

2009

THE REGIONAL PUBLIC SPENDING FOR TOURISM IN ITALY: AN EMPIRICAL ANALYSIS [^]

by *Roberto Cellini* and *Gianpiero Torrisi* [*]

Abstract - We analyse the effects of public spending for tourism, in Italian regions. The evaluation is permitted by the availability of the databank under the project "Conti Pubblici Territoriali" ("Regional Public Account") of the Ministry of Economic Development: the spending of all public subjects is aggregated according to the regions of destinations, and classified according to different criteria, including the sectoral criterion. We take a cross-section regression analysis approach. The effects of public spending for tourism on tourism attraction are investigated. Generally speaking, the effectiveness of public spending appears to be really weak.

Keywords: Tourism; Regions; Public Spending; Regional Public Account

JEL Classification: R53, R58, L83, C21, M49.

[^] We thank Guido Candela, Roberto Golinelli, and Calogero Guccio for helpful comments. The responsabilità for any errors is, of course, ours.

[*] Authors:
Roberto Cellini - Università di Catania, Facoltà di Economia, Dipartimento di Economia e Metodi Quantitativi. Corso Italia 55 - 95129 Catania - Italy;
tel. 095-7537728, e-mail cellini@unict.it;

Gianpiero Torrisi - University of Newcastle upon Tyne, Center for Urban and Regional Development Studies (CURDS), Claremont Bridge – Newcastle Upon Tyne NE1 7RU, UK;
tel. :+44 (0) 191 222 7728 e-mail gianpiero.torrisi@ncl.ac.uk.

THE REGIONAL PUBLIC SPENDING FOR TOURISM IN ITALY: AN EMPIRICAL ANALYSIS

Abstract - We analyse the effect of public spending for tourism, in Italian regions, on the performance of regions in attracting tourism. The exercise is permitted by the availability of the databank under the project "Conti Pubblici Territoriali" ("Regional Public Account") of the Ministry of Economic Development: the spending of all public subjects is aggregated according to the regions of destinations, and classified according to different criteria, including the sectoral criterion. We take a cross-section regression analysis approach. The effectiveness of public spending for tourism on tourism attraction is investigated. Generally speaking, its effectiveness appears to be really weak.

Keywords: Tourism; Regions; Public Spending; Regional Public Account

JEL Classification: R53, R58, L83, C21, M49.

1. Introduction

Starting from the mid-Nineties, in Italy, under the Project "CPT - Conti Pubblici Territoriali" (i.e., RPA – Regional Public Account), data on public spending at the regional level are collected, by aggregating on a regional basis all spending centres, namely, the National Government, Regional and Local administrations, public enterprises and other public subjects. Public expenditures are also re-classified according to different perspectives, in particular according to the economic sectors to which they are devoted, and according to the functional categories. The novelty of the RPA project is relevant: data on the sum of public spending for each region (independently of the level of government which has spent the money), and information on the specific sector to which the money is directed, are easily available.

In this paper we aim at analysing the effect of public spending in a specific sector, namely, the tourism sector. To the best of our knowledge, this is the first attempt to analyse the effectiveness of public spending at the regional level in the sector of tourism, in Italy.

Tourism, in Italy, is of primary importance. Nevertheless, the financial efforts of the public sector is rather limited, as the data at hand will clearly show. In any case, the evaluation of its effectiveness is worth analysing.

We can count on the data of public spending in capital account and in current account, over the period 1996-2007. If we cumulate over time the spending in capital account we can obtain a "financial" measure of the stock of capital accumulated over the considered period of time. Basing on the permanent inventory principle, the cumulative public spending in capital account over time, shall be interpreted as proxy of the public capital; if this computation is made

for the specific sector of tourism, one obtains a measure of public capital specific to such sector. In the present paper, this piece of information (based on financial data of Public Account) is studied in comparison with other measures of tangible and intangible forms of capital, and it is used to evaluate the effectiveness of public spending for tourism. More specifically, we aim at evaluating the effects of public spending for tourism on the dynamics of specific inputs, as well as on the final output (tourists presence, in the case at hand), taking a cross-section regression approach.

Our analysis provides information on the relationship among different inputs in the tourism industries, and the relative importance of different types of infrastructure in attracting tourists. A wide debate dating back to Hansen (1965) is still alive, for instance, on the relative importance of general economic infrastructures *vs.* sector-specific structures, or on the relative importance of "core" economic infrastructure, *vs.* non-core infrastructure, like social organizations (see the review of Torrisi, 2009, or La Rosa, 2008, specific on tourism). Clear-cut conclusion emerge from our present analysis.

We will find that the ties of the measures of public capital for tourism accumulated at the regional level over the period time under consideration (that is, the cumulative expenditure in capital account for tourism) is very weakly correlated with any specific infrastructure; moreover, its links with the size and dynamics of tourists' presence are weak as well.

The outline of the paper is as follows. Section 2 presents the data, with a particular focus on the features of the RPA data. Section 3 describes the data related to tourists' presence at the regional level in Italy. Section 4 and 5 provide the multivariate analysis, based on cross-section (or cross-region, more appropriately) regression exercises. Section 6 concludes.

2. Data

2.1 The Regional Public Accounting

The regional public account (RPA) database[1] provides financial data on revenues and expenditures in current and capital account of public sector at regional level. Data are available from 1996 to 2007.

[1] The RPA project officially started in 1994, with the "Delibera" (Decision) N. 8/1994 of the "Osservatorio per le Politiche Regionali" (Regional Policy Committee); in 2004, starting with the 2005-2007 National Statistics Programme (NSP), the RPA became a product of the National Statistical System (SISTAN). Currently, the project and the databank are run by the Italian Ministry of Economic Development.

The collected data are divided both according to a *sector-based* classification broken down into 30 items (including tourism) –that can be mapped to the Classification of the Functions of Government (COFOG) – and according to *economic functional categories* (7 in current account and other 7 in capital account, like general administration, wages, and so on).

The RPA information system was developed in order to create a structured, centralised database that would ensure the full accessibility and exploratory flexibility of the data, both for the network of data producers (the Regional Teams and the Central Team) and for external users. The primary aim of the Project was to evaluate the real adoption of the principles of additionality in the decision of allocating European funds. However, the information can be easily used to evaluate (ex-ante and ex-post) the regional policies, their bases and their effects. Data "have contributed to fill an historical hole in information source concerning the territorial distribution of public expenses." (Ministero dello sviluppo economico, 2007, p. 7, our translation).

The *reference universes* of RPA consists of two parts: General Government and the Public Sector. General Government essentially is formed of entities that primarily deliver non-market services, while the definition of Public Sector supplements and expands on that required by the European Union for the verification of the principle of additionality. Hence, the latter comprises, in addition to General Government, a "non-general-government" sector consisting of central and local entities that operate in the public services segment and are subject to direct or indirect control. The numbers of entities that make up these two different universes, and the precise boundary between general government and non-general-government can vary over time and is directly connected with the legal nature of the entities themselves and the laws that govern the various sectors of public action. In the RPA database the EU criteria were expanded in order to achieve a broaden coverage, thereby including, at the central level, a significant number of public enterprises hold by the state and, at the local level, several thousand entities that had not previously been covered in a comprehensive manner by any other statistical source. The entities within the various aggregates of public sector are subject to periodic monitoring as part of RPA project.

In this paper, we always consider the spending of the Public Sector, in its broad definition used by RPA. The benefits of considering such a vast universe of public subjects can be expressed primarily in terms of knowledge and information acquired. Indeed, at the same time as preparing the consolidated accounts for the public finance at the regional level, it is necessary gathering information on the activities performed and other financial information for the numerous public bodies or entities providing public services, for which the information available is often extremely limited and incomplete, despite the fact that the concept of public

sector was adopted in Italy more than thirty years ago at both the scientific and the legislative level.

Considering public spending measured by RPA as a whole, it can be observed that the total public expenditures in Italy have passed from 651,040 billions of Euro in 1996 to 958,021 in 2006, with a nominal increase of about 47%.[2]

Just to curiosity, the sector which covers the highest share of public spending is previdence (i.e., essentially pensions) (about 27-28%), while the sector with the lowest share is fishing (less than 0.1%); in a dynamic perspective, the sector with the highest growth rate is professional formation (about +180%) while the sector with the lowest growth rate is fishing (about -50%).

In what follows we focus on expenditures registered in the sector of tourism.

2.2 Public expenditure for tourism at the regional level in Italy

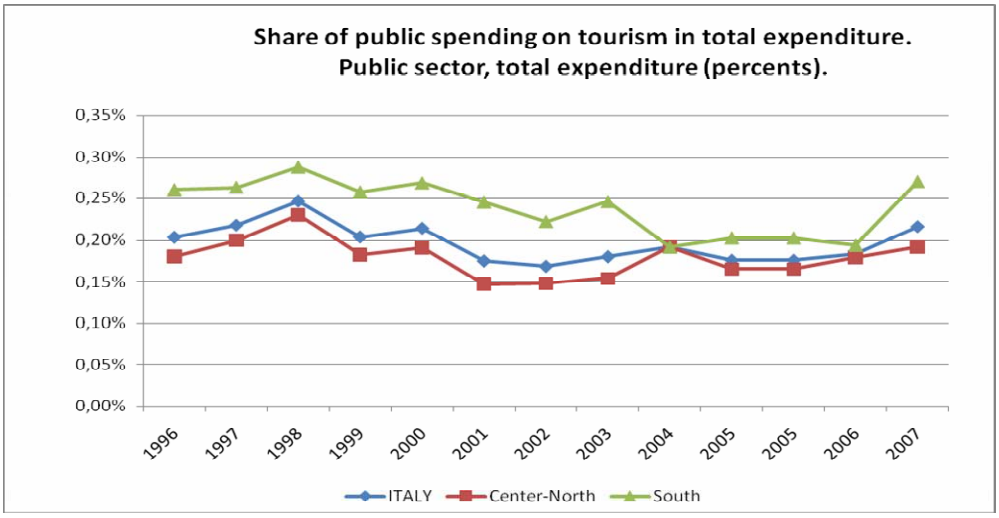
Public expenditures for tourism have moved from 1,320 (in 1996) to 1,755 billions of Euro in 2006, with a nominal increase of about 33%.[3] In relative terms the tourism sector accounts for a very small part (about 0.20%) of public expenditures, ranging in the interval 0.18-0.25% over the years under consideration.

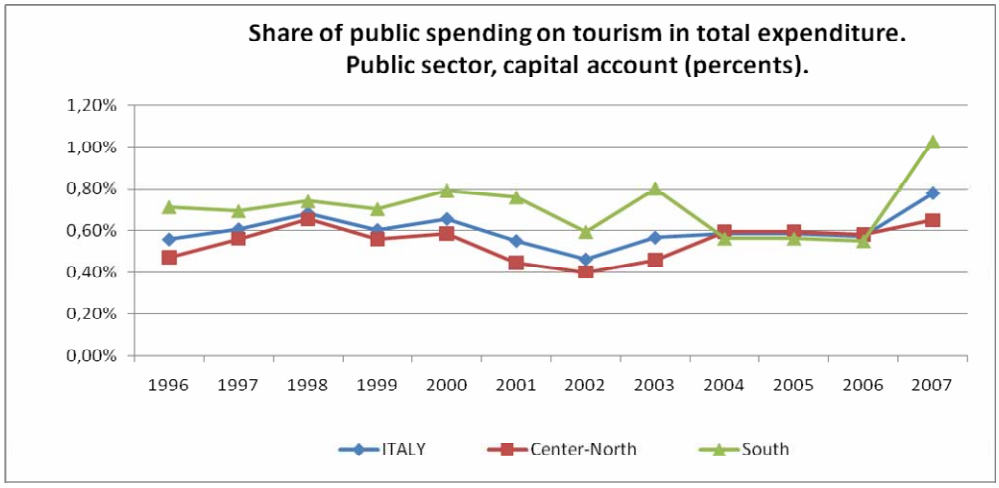
Expenditures for tourism include, in particular, spending for general administration in tourism, promotion of tourism attraction and related contributions; organization and information for tourism flows (in current account); building and restoring (or renewing) of tourism accommodation structures represent the major part of spending in capital account. Expenses in capital account represent about 50% of the public spending for tourism, a datum well larger than the percentage referred to the whole public spending; however, such a ratio greatly differ across regions: limiting our attention to the sector of tourism, public expenses in current account, vary between around 14% in Basilicata to around 85% in Lazio). Figure 1 shows the pattern of the percentage of the part of public spending devoted to tourism: panel (a) considers the total spending while panel (b) focuses on the spending in capital account. In all cases, tourism represents a very small part of public spending; however, in Southern regions it covers a slightly larger part as compared to the Northern regions.

[2]At the moment, the registered value for 2007 is equal to 709.599 (with a nominal decrease with respect to 2006 of about 26%); likely, this datum will be amended, even if the nominal decrease has to be expected, in front of the public finance reduction policies.

[3] The 2007 datum is about 1,529; see footnote 2.

Figures 1.a, 1.b.
Patterns of the share of sector "tourism" in total public expenditure and in public expenditure in capital account.





By cumulating the expenditure in capital account over time, we obtain a datum (denoted by *KGTURSUM*) which is interpretable as the accumulated stock of public capital for tourism, over the considered time, on the basis of the permanent inventory technique. Of course, we are aware that such datum could be simply interpreted as the accumulated value of a public expenditure, and its interpretation as a measure for a capital stock can be questionable under several perspectives. Firstly, public expenditure sometimes does not translate in physical structures, even if it is in capital account. Secondly, the depreciation rate is assumed to be zero

in our computation. Thirdly, we do not consider the stock at the initial period (for this reason, the cumulated spending is more correctly interpretable as the increase in the stock of public capital, rather than the stock capital in itself). Four, we do not consider the autocorrelation of expenditure in subsequent periods, and so on. However, the tradition of considering the cumulated expenses in capital account as a measure for capital is rather widespread in economics literature (see Romp and De Haan, 2007, for a discussion, along with Picci, 1997, 1999 on the Italian case).

The data depend of course on the dimension of the region, and they have to be normalised (according to the size of region, as measured by its surface or population), if the dimension is not explicitly accounted for in the analysis.[4] These expenses for tourism can be related to *space-serving* structure or *population-serving* structure, so that it is not clear ex-ante whether the normalisation according to the territorial surface is more appropriate that the normalization based on population.[5] The simple correlation between the cross-section series of the cumulated public expenditure, normalised according the surface and according to the population, is 0.885, so that the different choice is immaterial on the final results. Table 1 (Columns 1 and 2) reports the series.

Data on per-capita public expenditures for tourism at the regional level, in current-account and capital account, show a great deal of variability: per-capita (per 100,000 inhabitants) public expenses for tourism in capital account range from 3.12 in Lazio to 244.98 in Valdaosta (average datum, 14.44) while (cumulated) expenses in current account range from 3.68 (Lombardia) to 232.6 (in Valdaosta), with a mean equal to 29.10; cross-section correlation between current and account public expenditure is around .95. Though the high correlation, the ratio between capital-account and current account takes the minimum values of .20 and .39 (in Lazio and Campania, respectively) and the maximum values of 3.10 e 3.35 (in Molise and Basilicata, respectively), average value being 1.11. Consider however that tourism represent a very peculiar case, since the ratio between capital-account and current-account public expenditure is –for the whole Public Sector– between .16 and .19 over the years considered by RPA: in other words, the expenses in capital account are about the 14-16% of the total public spending, while such a percentage is 50-52% in the specific sector of tourism.

This is a first clear-cut evidence: the spending efforts in capital account, as compared to current account, are very large for the tourism sector, that is, much larger than in other sectors.

[4] The twenty Italian regions have very different dimension: population ranges from 120,000 inhabitants in Valdaosta to over 9 millions in Lombardia, and surface ranges from 326 to 2,570 thousands kmsq (Valdaosta and Sicily, respectively).

[5] On the difference between *space-serving* and *population- serving* public capital, see Golden and Picci (2005) and their references.

Table 1 – Cumulated public expenditure in capital account for tourism (KGTURSUM), normalised according to different criteria

KGTURSUM/pop07		KGTURSUM/sup		KGTURSUM/pres07	
Lazio	0.31	Umbria	89.4	Veneto	5.31
Campania	0.39	Puglia	89.7	Lazio	5.34
Puglia	0.42	Lazio	99.6	Emilia R	6.02
Lombardia	0.45	Emilia R	104	Marche	8.60
Emilia R	0.54	Marche	121	Toscana	9.23
Friuli VG	0.68	Toscana	167	Campania	1.17
Marche	0.76	Campania	170	Umbria	1.21
Umbria	0.86	Calabria	173	Puglia	1.51
Toscana	1.05	Friuli VG	178	Lombardia	1.52
Calabria	1.30	Lombardia	182	Liguria	1.84
Sicilia	1.58	Basilicata	193	Friuli	2.48
Liguria	1.62	Abruzzo	205	Trentino AA	2.59
Abruzzo	1.69	Molise	214	Calabria	2.99
Veneto	1.78	Veneto	276	Abruzzo	3.00
Piemonte	2.19	Sicilia	309	Sicilia	5.44
Molise	2.97	Sardegna	344	Sardegna	7.00
Basilicata	3.25	Piemonte	376	Piemonte	9.26
Sardegna	5.00	Liguria	481	Valdaosta	9.84
Trentino AA	10.92	Trentino AA	799	Basilicata	10.4
Valdaosta	24.49	Valdaosta	937	Molise	14.6

Note: The cumulated spending is divided: (a) per 100 residents; (b) per 100 hmsq of territorial size; (c) per 10,000 tourists' presence (all data referred to 2007).

A different picture emerges, if we consider the cumulated expenses normalised according to the tourists' presence. Such a normalization, however, provides values that can be interpreted as the reciprocal of the average productivity of public expenditure in capital account. (Table 1, Col. 3): Veneto, Lazio and Emilia R. are the regions with the lowest public capital for tourism per tourists' presence (i.e., in which public spending is more productive), while at the opposite side we find Molise, Basilicata and Valdaosta. (The situation is rather stable over time: an identical situation emerges in 2004, and it was very similar at the beginning of the time period considered).

In order to understand the relationship between the computed index for public capital for tourism and some specific indicator for physical structure for tourism, we provide Tables 2 and 3, considering both (private) infrastructure for accommodation, and other general infrastructures. If variables are considered in aggregate terms, no significant correlations emerge. In the case of normalised variable, it is worth noticing that the cumulative public spending is correlated with the number of hotels and beds (but not with their variations).

Table 2.
Correlation between cumulative public spending in capital account for tourism (KGTURSUM) and selected indices of endowment of tourism infrastructures

	HOT96	HOT07	BED96	BED07	DHOTEL	DBED
In aggregate terms:						
KGTURSUM	-0.192	-0.226	-0.380	-0.378	-0.155	-0.278
In normalised terms:						
KGTURSUM_POP	0.532	0.527	0.883	0.857	-0.035	-0.671
KGTRUSUM_SUP	0.238	0.095	0.393	0.211	-0.047	-0.417

Table 3.
Correlation between public spending in capital account for tourism (KGTURSUM) and selected indices of endowment of public infrastructures

	ROAD	HIGW	RAIL	PORT	AIRP
In aggregate terms:					
KGTURSUM	0.362	0.278	0.327	0.190	0.231
In normalised terms:					
KGTURSUM_POP	-0.460	-0.033	-0.656	-0.335	0.151
KGTURSUM_SUP	-0.405	0.209	-0.478	-0.202	0.174

Note: Roads, Highways, Railways, Ports and Airports are normalised according to the surface in the second part of the Table; KGTURSUM is normalised according to population (line 2) and according to surface (line 3)

However, it is clear that several general infrastructures are relevant for tourism. To this end, we take into account the indices computed by Marrocu, Paci e Pigliaru (in Barca et al., 2006) with respect to the whole public capital. Marroccu et al. (2006) built the mentioned index, starting from the data of public expenditure in capital account at the regional level (for all sectors) available from RPA, and combining the computation with data from SISTAN related to the situation in 1995. They also computed the ratio between public and private capital, so that the computation of indices for total capital (i.e., private capital plus public capital) at the regional level is possible. It is worth stressing that the data computed by Marrocu et al. are original, since SISTAN does not provide series for the capital stock at the regional level. The meaning of "capital" adopted by Marroccu et al. is very wide, since it includes both tangible and intangible forms of capitals[6] (see Marroccu et al., 2006, Figures 1 and 2, page 212). We denote the indices for public capital and total capital (per capita) computed by Marroccu et al. by XKPUBPOP and XKTOTPOP respectively. Data are reported in Table 4.

As it is well known (and discussed by Marroccu et al. 2006) the public capital (in per capita terms) appears to be larger in the Southern regions of Italy as compared to the Northern ones, precisely because of the larger dimension of the public spending in capital account. This does

[6] Marrocu et al. analyse data available up to 2002.

not hold for the total (public and private) capital. The simple cross-section correlation between total capital and public capital is equal to 0.275 (quite a low value).

Table 4.
Indices of public capital and total capital (per capita) in Italian regions

Region	XKPUBPOP	XKTOTPOP
Piemonte	88.00	440.00
Valdaosta	88.00	440.00
Lombardia	67.00	478.57
Trentino A A	231.00	624.32
Veneto	66.00	440.00
Friuli V G	134.00	496.29
Liguria	146.00	442.42
Emilia R	73.00	456.25
Toscana	83.00	395.23
Umbra	115.00	383.33
Marche	94.00	391.66
Lazio	116.00	446.15
Abruzzo	119.00	383.87
Molise	198.00	421.27
Campania	107.00	314.70
Puglia	83.00	286.20
Basilicata	236.00	393.33
Calabria	137.00	318.60
Sicilia	104.00	315.15
Sardegna	180.00	382.97
Simple Average	123.25	412.52
Italy	100.00	313.12

Note: Normalization is such that Italy has XKPUBPOP equal to 100.

Table 5 provides simple correlation between the two mentioned capital variables and some selected indices of public infrastructures, that we computed basing on ISTAT (2006) databank. The selected public infrastructures are normalised according to territorial surface and according to population, but the substantial conclusions remain unchanged. Some points are worth stressing. Firstly, the correlation between our index for public capital specific to tourism and indices of general capital is 0.280 and 0.403 (total capital and public capital, respectively), not low in the latter case. Secondly, the endowment of beds and structures of accommodation (appropriately normalised) shows a good degree of correlation with our index of public capital for tourism, while the correlation is weak with total capital. Thirdly, the indices for transport

infrastructures show low degrees of correlation with total capital and public capital – in several cases even negative; this supports the point that public spending has weak ties with concrete realization of infrastructures.

Table 5.
Simple correlation between indices for public and total capital, and other infrastructures indices.

	Corr. with XKTOTPOP	Corr. with XKPUBPOP
IND_ROADSUP	-.347	.384
IND_ROADPOP	*-.056*	*.673*
IND_HIGHWSUP	.102	-.346
IND_HIGHWPOP	*.205*	*-.147*
IND_RAILSUP	-.0820	-.344
IND_RAILPOP	*-.052*	*.606*
IND_PORTSUP	-.597	-.124
IND_PORTPOP	*-.548*	*.117*
IND_AIRPSUP	-.311	-.589
IND_AIRPPOP	*-.035*	*-.233*
INFRACOMPPRINC	-.371	-.544
IND_HOTTOTPOP	*.466*	*-.132*
IND_TOTBEDPOP	*.479*	*-.207*
IND_KGTURSUMPOP	*.402*	*.2802*
IND_CGTURAVEPOP	*.376*	*.0844*

Note: IND_(*) denotes an index for variable (*) computed for each region and having average value equal to 100; ROAD is for total kms of road, HIGHW for total kms of highways, RAIL for total kms of rails, PORT for number of ports, and AIRP for total number of airports. INFRACOMPPRINC is the first principal component computed on the above mentioned 5 variables normalised according to the territorial surface.

3. Tourists' presence in Italian regions

Tourists presence[7] can not be evaluated simply in aggregate terms: in such a case, a picture would emerge in which Veneto, Trentino A.A. and Emilia R. steadily attract the highest number, while Molise, Basilicata and Valdaosta record the lowest ones, but this is due to the different dimension of regions. It is meaningful to consider the presence normalised according to resident population or territorial size. The following Table 6 shows the results.

The rankings of regions according to the tourism density (tourists per hmsq) or touristicity rate (tourists per resident) are rather stable over time (though non perfectly static)[8]

[7] Reports on tourism in Italy are provided by Mercury – Turistica (e.g., 2003 or more recent editions).
[8] Regions in which tourists' presence show the highest percentage growth rate (in 2007 w.r.t. 1996) are Calabria, Basilicata and Lazio, while the lowest rate pertain to Friuli V.G., Liguria and Valdaosta.

The highest tourists' density pertain to Trentino A.A., Veneto and Liguria while the highest touristicy rates are in Trentino A.A., Valdaosta and Veneto. At the bottom of the lists one finds Molise and Basilicata.

Table 6.
Tourists' presence normalised according to territorial surface or resident population: Rankings of Italian regions

Presence 1996 per hmsq		Presence 2007 per hmsq		Presence 1996 per resident		Presence 2007 per resident	
Molise	1.043	Molise	1.469	Molise	1.4155	Molise	2.037
Basilicata	1.0675	Basilicata	1.858	Basilicata	1.7567	Piemonte	2.370
Sardegna	3.1338	Piemonte	4.062	Puglia	1.8345	Basilicata	2.821
Piemonte	3.1904	Sardegna	4.918	Piemonte	1.9088	Sicilia	2.910
Calabria	3.2447	Sicilia	5.679	Sicilia	2.0099	Lombardia	3.001
Puglia	3.8407	Calabria	5.789	Calabria	2.3794	Puglia	3.139
Sicilia	3.9167	Puglia	5.929	Lombard	2.5692	Campania	3.415
Abruzzo	5.1459	Abruzzo	6.829	Campania	3.1660	Calabria	4.369
Umbria	5.3674	Umbria	7.393	Lazio	3.9337	Abruzzo	5.630
Lombardia	9.584	Valdaosta	9.519	Abruzzo	4.4189	Lazio	5.844
FriuliVG	10.2583	Friuli VG	11.119	Sardegna	4.5787	Sardegna	7.141
Valdaosta	10.792	Lombardia	12.006	Umbria	5.5614	Marche	7.161
Marche	11.5526	Marche	14.014	FriuliVG	6.8407	Friuli VG	7.202
Lazio	11.7559	Campania	14.545	Marche	7.7632	Liguria	8.813
Campania	13.308	Emilia R	17.254	Emilia R	8.6288	Marche	8.843
Toscana	13.749	Toscana	18.130	Toscana	9.0481	Emilia R	9.039
Emilia R	15.234	Lazio	18.659	Liguria	9.5031	Toscana	11.460
Veneto	23.1916	Liguria	26.139	Veneto	9.6362	Veneto	12.889
TrentinoAA	25.253	TrentinoA.A.	30.864	Valdaosta	9.9506	Valdaosta	24.890
Liguria	28.3779	Veneto	33.454	TrentinoAA	37.6913	TrentinoA.A.	42.220

Table 7 provides data on the ratio between tourists presence and beds (in all accommodation structures); also in this case, the ratio can be easily interpreted as a productivity measure, which ranges between the minimum values in Calabria and Molise to the highest scores of Trentino A.A. and Lazio. Also in this case, however, an opposite interpretation could be appropriate as well: Calabria and Molise appear to be over-endowed while Trentino A.A. and Lazio appear at the opposite pole of the list.

Table 7.
Toruists' presence per bed

Tourists' presence 1996 per bed		Presence 2007 per bed	
Calabria	26.744	Calabria	44.785
Molise	37.508	Molise	47.523
Basilicata	43.876	Basilicata	48.766
Sardegna	56.840	Puglia	54.752
Abruzzo	56.865	Friuli VG	57.018
Peimonte	60.468	Piemonte	57.392
Marche	60.707	Marche	59.854
Puglia	64.298	Valdaosta	60.721
Valdaosta	66.670	Sardegna	62.625
Friuli VG	77.924	Abruzzo	70.993
Sicilia	86.647	Umbria	75.665
Toscana	89.787	Sicilia	80.492
EmiliaR	91.945	Toscana	86.244
Lombardia	93.941	Emilia R	88.395
Trentino A.A.	94.312	Friuli VG	89.754
Umbria	96.670	Lombardia	90.023
Liguria	98.809	Veneto	97.230
Lazio	102.49	Campania	104.701
Veneto	103.53	Trentino AA	111.824
Campania	110.13	Lazio	117.945

4. A parametric analysis of cross-region public spending

In this Section we aim at evaluating the effectiveness of public spending in capital account: (i) firstly, on the accumulation of tourism structures; (ii) secondly, directly on the number (and growth rate) of tourists' presence. To this aim, we take a cross-section (or cross-region, more precisely) regression approach. All the analysis is carried out in per-capita terms, if not differently stated.

We prefer to start with the evidence concerning the tourists' presence. Table 8 shows the result of the cross-section regressions, in which the dependent variable is the percentage variation of tourists per resident. Such a variable is regressed against the constant term, the value of tourists per resident at the initial level, and one additional regressor; Table 8 shows the coefficients (and the significance statistics) of the additional regressor. Standard errors are robust, according to the White computation. In formal terms, Table 8 considers each of the following regressions

(1) $$\dot{y}_i = \alpha_o + \alpha_1 y_{0i} + \alpha_2 x_i + e_i$$

where y denotes the tourists presence per resident (y-dot is its percentage variation over 1996-2007; y_0 is its value at the initial period), x is an additional regressor (in several cases, it is the growth rate of a variable) and e is the residual. Results –and in particular the estimates of coefficient α_2 – are provided in Table 8, whose interpretations is quite easy. For example, the percentage variation of the hotel (per resident) is significant in explaining the percentage variation of tourists per resident (once the initial level of tourists per resident is considered, along with the constant term[9]), while the percentage variation of extra-hotel structure is non-significant. In general, we can observe that the percentage variation of the density of hotel gives a (marginal) positive and significant contribution to the growth rate of tourists (per resident); a similar conclusion holds for the percentage variation of beds, the percentage variation of workers in the tourism sector and the percentage variation of the share of luxury hotels.

Quite surprisingly, the physical infrastructure of transport do not exert any positive effect on the growth rate of tourists. This holds both for specific infrastructures such as roads, railways, ports (not reported for the sake of brevity) and for the first principal component of such structures. A similar non-significant effect emerges also for "cultural endowments", as measured by a dummy variable capturing the presence of site(s) with the UNESCO recognition. The aggregate public capital (in all sectors, not only tourism) has a positive effect, while the private capital has a negative effect; the total (public plus private) capital has a non-significant sign. This outcome can be explained, by observing that private capital is higher in the region with low specialisation in tourism.

Let us focus on the variables of main interest in this study: the cumulation of public spending for tourism in capital account; it has not exerted any significant effect, both if considered in per-resident terms, and in terms normalised to the territorial size. The public spending in current account for tourism in current account, exerts a negative effect on the percentage growth of tourists per resident; such a negative effect is significant if the normalisation is made according to the territorial size. However, the fact that public spending for tourism has no positive effect on the tourists' presence does not mean that it is not effective: it simply means that it has no direct effect.

[9] In all the considered regressions, the constant term is significant and the coefficient α_1 is negative and significant at least at the 15% level in any case.

Table 8.
Marginal effect of a list of factors on the growth rate of tourists per resident in Italian regions

X	Coeff.	t-statistics	p-value
VP_HOTPOP	0.830	*t*=3.77	*p*=0.002*
VP_EXHOTPOP	-0.002	*t*=-0.35	*p*=0.720
VP_HOTTOTPOP	-0.003	*t*=-0.16	*p*=0.870
VP_HOTBEDPOP	0.466	*t*= 3.66	*p*=0.002*
VP_EXHBEDPOP	0.032	*t*= 0.16	*p*=0.876
VP_TOTBEDPOP	0.326	*t*= 2.34	*p*=0.032*
VP_WORKTOURPOP	0.369	*t*=4.96	*p*=0.001*
VP_SHARE4-5STARH	0.250	*t*=3.98	*p*=0.001
KGTURSUMPOP	0.004	*t*=0.30	*p*=0.766
KGTURSUMSUP	-129.7	*t*=-0.38	*p*=0.710
CGTURAVEPOP	-1398.6	*t*=-1.65	*p*=0.110
CGTURAVESUP	-4994.1	*t*= -3.31	*p*=0.004*
XKPUBPOP	0.002	*t*= 3.68	*p*=0.018*
XKPRIVPOP	-0.002	*t*= -3.06	*p*=0.007*
XKTOTPOP	-0.0001	*t*=-0.88	*p*=0.388
INFRACOMPPRINC	0.003	*t*= 0.11	*p*=0.911
UNESCODU	-0.005	*t*=-0.48	*p*=0.636

Note: The Table reports the estimates of coefficient α_2 in eq. (1). One separate regression is carried out for each additional regressor reported in table, and considered along with the initial level of tourists presence per resident and a constant term. Estimates are robust à la White. Starred variables are significant at the 5% level.

In fact, it is interesting to investigate whether the public spending for tourism has exerted some effect on the structure which have shown a positive impact on the tourists' presence. Taking into account the evidence from Table 8, it is necessary to understand whether public spending affects (the change of) hotel, beds, workers involved in tourism, and other infrastructures.

Different estimation exercises have been conducted to this end, considering variable in levels, in difference, in growth rate, and according to different normalization. Results are substantially univocal, across the different specification procedures, and we report (in Table 9) only the specification referred to percentage variation. Substantially, we consider the (cross-region) regression

$$(2) \qquad \dot{x}_i = \beta_o + \beta_1 x_{0i} + \beta_2 \, KGTURSUMPO P_i + u_i$$

in which the percentage growth rate of variable x (over the period 1996-2007) is regressed against a constant term, the value of x at the initial time (i.e., x in 1996, denoted by x_0 in eq. (2) and by *X0* in Table 9) and against the cumulative public spending in capital account. For instance, the first row of Table 9 says that the cumulative spending in capital account is not significant in explaining the percentage growth rate of hotel (pre resident), once the hotel per resident at the beginning (and a constant term) is taken into consideration. The value of hotel per resident in 1996, on the opposite, has exerted a (negative) effect on its growth rate, significant at the 6% level. That is, the density of hotel has grown at a higher rate where it was the lower at the initial period (a sort of beta-convergence as taken place). In reference with the factor at hand, namely the density of hotel per resident, thus, we can conclude that the variation of hotel per resident has given a significant positive contribution to the growth of tourists' presence (as documented by Table 8) but it has not been affected by the public spending in capital account.

Identically, the effect of the growth of bed on the growth of tourists is significant, but the growth of bed has been affected non-significantly by public spending in capital account (contrarily to what it should be deemed).

Again, the extra- hotel accommodation has not been affected in a significantly positive way by public spending in capital account, nor public spending (in capital account) has been effective in improving the quality of hotel structures (as measured by the variation of share of 4-5 star hotels)

So far, we have focussed on the public spending in capital account, because this type of spending should have affected the variation of infrastructure. It could be interesting, however, to analyse the effects of public spending for tourism in current account. To such end, we have repeated the regression analysis reported in Table 9, adding the regressor of current public spending for tourism (per resident; average value over the period 1996-2007) in each regression. The consideration of this additional regressor does not modify the conclusions: in most cases it is not significant; in some cases, it is significant (with a negative sign) and precisely in such cases, the public spending in capital account becomes significantly positive. However, our interpretation does not change in the substance: public spending is in general not significant; in some cases the results are not robust and their signs and significance change, if different types of public spending are considered together. When public spending in capital account for tourism appears to have a significant positive (marginal) effect on the accumulation of structures, the public spending in current account exerts a marginal significant negative impact.

Table 9.
Marginal effect of KGTURSUMPOP on a list of factors potentially affecting the growth rate of tourists per resident in Italian regions

X	KGTURSUMPOP			X0		
	Coeff.	t-stat	p-value	Coeff.	t-stat	p-value
VP_HOTPOP	0.011	*t*=1.29	*p*=0.212	-77.71	-2.01	0.060^{+}
VP_EXHOTPOP	-0.126	*t*=-1.64	*p*=0.119	-595.2	-3.57	0.002*
VP_HOTTOTPOP	-0.012	*t*=-0.34	*p*=0.735	-150.8	-2.13	0.033*
VP_HOTBEDPOP	0.028	*t*= 1.09	*p*=0.288	-4.386	-1.64	0.118
VP_EXHGEDPOP	0.006	*t*= 0.20	*p*=0.841	-2.975	-0.95	0.355
VP_TOTBEDPOP	0.032	*t*= 1.15	*p*=0.263	-2.642	-1.75	0.098^{+}
VP_WORKTOURPOP	0.012	*t*=0.53	*p*=0.601	-109.1	-1.80	0.089^{+}
VP_SHARE4-5STARH	-0.019	*t*=-1.62	*p*=0.122	0.001	-0.89	0.382

Note: Table reports the estimates of coefficient alfa2 in eq. (1). One separate regression is carried out for each additional regressor reported in table, and considered along with the initial level of tourists presence and a constant term. Estimates are robust à la White. Variables denoted by * or + are significant at the 5% or 10% level, respectively.

6. Multivariate analysis of the tourism success of Italian regions

In this Section we present some cross-section regression exercise, aimed at estimating the determinants of tourists' presence (per resident) and the value-added generated in the tourism sector, at the regional level, considering the twenty Italian regions. This analysis complements the evidence presented above, and maintains the ultimate goal of evaluating the effectiveness of public spending for tourism.

Table 10 provides the results of regressions in which the percentage variation of tourists' presence per resident (in 2007 w.r.t. 1996) is considered as the dependent variable. This Table can be considered, of course, as the extension to the multivariate context of Table 8. Several exercises have been made. The variables which appear to have a strong effect on the dynamics of tourist presences –and whose coefficient are robust– are the percentage variation of hotel and the percentage variation of workers in the tourism sector. Such variables have to be inserted as explanatory factors in any considered regression in Table 10. It is interesting to note that the initial level of tourist presence is always not significant. As to the public spending variables, the spending in capital account is marginally not significant (Column (2)), while the public spending in current account appears to be negative and statistically significant (Column (3)). If inserted jointly (Column (4)), the public spending in current account continue to have a

significantly negative coefficient, while the public spending in capital account becomes positive, and significant at the 5% level. However, the joint inclusion of public spending for tourism in capital and current account does not improve the explanatory power of the regression (as compared to the case in which neither variables of public spending are inserted), and the information criteria suggest to prefer the specification without public spending variables. Tests on omitted variables, made with reference to the specification of Column (1) of Table 10, and reported in Table 10.bis support the choice of that specification as the preferable one. In particular, transport infrastructure are not significant. Neither the presence of sites under the UNESCO recognition, or the Putnam index of social capital exert a significant marginal effect.

Table 10.
Variation of tourists' presence per resident (1996-2007): multivariate analysis

Dependent variable: VPPRESPOP	(1)	(2)	(3)	(4)
COSTANT	0.165	0.192	0.214	0.223
	(4.47)	(4.37)	(5.30)	(6.09)
	[0.000]*	[0.001]*	[0.000]*	[0.000]*
VPH	0.770	0.780	0.769	0.707
	(3.48)	(3.23)	(3.42)	(4.05)
	[0.003]*	[0.005]*	[0.004]*	[0.001]*
VPWORKTOURPOP	0.324	0.284	0.251	0.242
	(3.43)	(2.30)	(1.89)	(2.72)
	[0.003]*	[0.034]	[0.076]+	[0.015]*
KGTURSUMPOP	===	-0.006	===	0.039
		(-1.15)		(2.46)
		[0.264]		[0.026]*
CGTURAVEPOP	===		-1.35Ee-4	-0.051
			(-3.09)	(-3.46)
			[0.007]	[0.003]*
N	20	20	20	20
R2	0.61	0.63	0.65	0.69
Akaike	-0.52			-0.56
Schwarz	-0.36			-0.32

Note: Student-*t* in brackets; *p*-value in squared brackets. Variables denoted by * or + are significant at the 5% or 10% level, respectively.

Table 10.bis
Omitted varible test w.r.t. Column (1) of Table 10

Dependent variable: VPPRESPOP	
KGTURSUMPOP	*F*=0.575 [0.459]
CGTURAVEPOP	*F*=1.681 [0.213]
VPHOTTOT	*F*=0.018 [0.893]
VPPLETTPOP	*F*=0.266 [0.613]
XKTOTPOP	*F*=0.564 [0.463]]
INFRACOMPPRINC	*F*=0.004 [0.948]
UNESCODU	*F*=0.296 [0.593]
PUTN	*F*=0.096 [0.760]

Note: a F-test is reported, with its p-value, on the addition of each of these variables in the specification considered by Colum(1) of Table 10.

If we considered the variation (rather than the percentage variation) of tourist presence per resident acroos regions, we would find that the inital level of presence is significant, and on of the other considered variables. Verbally, the distribution of tourists' presence across regions appears to be very static and all the investigated factors appear to be unable to modify such distribution significantly.

However, the tourists' presence is not the unique way to measure and evaluate the success of tourism of different regions.

We also consider data on Value Added generated in the sector of tourism (Source: ISTAT, 2008). More specifically, we consider the Value Added in tourism normalised to the resident population (VATURPOP), and we investigate its determinants . Table 11 provides the results of some regression exercises. The number of beds (per resident), and worker in tourism sector, and the total aggregate capital per resident are always significant (and have been inserted in any considered regression). It is interesting to note that if the capital specific for tourism is considered instead of the total capital, it turns out to have a negative (and significant!) sign (see Column (2) vs. (1)). From Columns (3)-(4), it clearly emerges that public spending does not contribute to explain the value-added in the tourism sector. If these public expenses are considered together, both become significant –public spending in current account with a positive effect, while public spending in capital account with a negative effect. This could be interpreted as a result of the fact that the two variables have complementary effect on the dependent variable. The complementary effects would be opposite. Note also that the inclusion of the two variables does not affect the sign and significance of other regressors; note also that the explanatory power of the regression does not improve significantly once the two public spending variables are inserted. Moreover, the Akaike and the Schwarz criteria lead to consider

specification of Colum (1) preferable to specification of Column (5). Thus, the inclusion of both variables of public spending is in any case questionable. Even if included, however, the conclusion remains that public spending in capital account does not exert any positive effect on value added in the tourism sector.

Table 11.
Value-Added per capita in the tourism sector (2007)

Dependent variable: VATURPOP	(1)	(2)	(3)	(4)	(5)
COSTANT	-3.88e-4	2.9e-4	3.41e-4	-3.81e-4	-4.05e-4
	(-2.47)	(5.28)	(-2.10)	(-2.17)	(-2.36)
	[0.024]*	[0.000]*	[0.053]$^{+}$	[0.046]*	[0.033]*
PLETT07POP	1.81e-3	2.51e-3	2.61e-3	1.91e-3	2.23e-3
	(3.72)	(2.35)	(3.25)	(2.27)	(2.88)
	[0.002]*	[0.031]*	[0.005]*	[0.038]*	[0.012]*
WORKTOURPOP	0.159	0.255	0.161	0.159	0.183
	(3.62)	(4.53)	(3.28)	(3.41)	(4.89)
	[0.002]*	[0.003]	[0.005]*	[0.004]*	[0.001]*
XKTOTPOP	2.08e-6	===	1.86e-6	2.05e-6	1.98e-6
	(4.70)		(4.05)	(4.03)	(4.17)
	[0.000]*		[0.001]*	[0.001]*	[0.001]*
KGTURSUMPOP	===	-2.46e-5	-1.55e-5	===	-5.363-5
		(-2.24)	(-1.44)		(-3.36)
		[0.039]*	[0.168]		[0.005]*
CGTURAVEPOP	===	===	===	-0.218	5.51
				(-0.19)	(3.09)
				[0.849]	[0.008]
N	20	20	20	20	20
R2	0.95	0.92	0.95	0.95	0.97
F	106.6*	70.09*	86.05*	75.09*	95.84
Akaike	-14.86				-15.18
Schwarz	-14.67				-14.88

Note: Student t in parenthesis and p-value in squared brackets; significant variables at the 5% level are starred.

7. Conclusions

In this paper we have taken a cross-section regression approach to analyse the effectiveness of public spending for tourism in the Italian regions. The exercise has been made possible by the availability of the data-bank built under the project "Conti Pubblici Territoriali", in which the spending of all public centres are aggregated and re-classified according to different criteria. In particular, it is possible to know the spending for each region (made by different public subjects), and its type and category.

The total public spending, in capital account, for tourism has appeared to have weak ties with the size and dynamics of specific physical infrastructure (of both public and private nature); moreover, the effects are far from being significant also as concerns the tourists' presence, and the value-added (per capita) in the tourism sector.

In fact, our results are more articulated, and they have an exploratory nature, at the present stage. Nevertheless, they are consistent with the results obtained by different studies. Generally speaking, the public spending, in Italian regions, appears to have a questionable impact on the dynamics of income and productivity in different territorial areas (see Barca et al., 2006; Ashauer, 1989, and Picci, 1997 e 1999, see also the review of La Rosa, 2008, on the effects of infrastructures).

On the point of the contribution of specific public capital –that is, the contribution of specific investment in tourism, for the tourism sector– we limit our observations here in noting that in other sectors, specific investments have significant impact, differently from that we have found for the tourism sector. Perhaps, also in this case, it is worth mentioning that tourism is a very large and composite basket of goods and services, and the focus on a subset of factors could be misleading.

References

Ashauer D. (1989), "Is Public Expenditure Productive?", *Journal of Monetary Economics*, vol. 23, pp. 177-200.

Barca F., F. Cappiello, L. Ravoni, M. Volpe (Eds.) (2006), *Federalismo, Equità, Sviluppo: I risultati delle politiche pubbliche analizzati e misurati dei Conti Pubblici Territoriali*, il Mulino, Bologna.

Brau R., A. Lanza, F. Pigliaru (2003) "How Fast Are the Tourism Countries Growing? The Cross-Country Evidence", Atti del Convegno CRENoS-FEEM Torusim and Sustainable Development, Cagliari 19-20 September.

Candela G., R. Cellini (1997), "Countries' Size, Consumers' Preferences and Specialization in Tourism: A Note", *Rivista Internazionale di Scienze Economiche e Commerciali*, vol. 44, pp. 217-44.

Candela G., R. Cellini (2006), "Investment in Tourism Market: A Dynamic Model of Differentiated Oligopoly", *Environmental and Resource Economics*, vol. 35, pp. 41-58.

Charnes A., W.W. Cooper, E. Rhodes (1978), "Measuring the Efficiency of Decision.Making Units", *European Journal of Operational Research*, vol. 2, pp. 429-44

Costa P., M. Manente, M. C. Furlan (Eds.) (2002), *Politica economica del turismo*, Nettuno-TCI, Roma.

Golden M. , Picci L. (2005), "Proposal for a new Measure of Corruption Illustrated with Italian Data", *Economics and Politics*, vol. 17, pp. 37-75.

Hansen, N. M., 1965, The structure and determinants of local public investment expenditures. Review of economics and statistics 2.

ISTAT (2006), *Le Infrastrutture in Italia. Un'analisi della dotazione e della funzionalità*, Istat, Roma.

ISTAT (2008), *Conti economici regionali*, Istat, Roma.

Lanza A., F. Pigliaru (1994), “The Tourism Sector in the Open Economy", *Rivista internazionale di Scienze Economiche e Commerciali*, vol. 41, pp. 15-28.
Lanza A., F. Pigliaru (1999), "Why are Tourism Countries Small and Fast-Growing?", *Crenos Working paper* 99/6.
La Rosa, R. (2008), “Infrastrutture e sviluppo”, Università Cattolica del Sacro Cuore, W.P..
Mercury - Turistica (2003), *Rapporto sul turismo italiano 2003*, Mercury, Firenze.
Ministero dello sviluppo economico (2007), *Guida ai Conti Pubblici Territoriali*, Roma,
Picci L. (1995), “Lo stock di capitale nelle regioni italiane”, DSE w.p. 229, Dipartimento di Scienze Economiche Università di Bologna.
Picci L. (1997), “Infrastrutture e produttività: il caso italiano”, *Rivista d Politica Economica*, vol. 87, pp. 67-88
Picci L. (1999), “ Productivity and Infrastrucuture in Italian Regions”, *Giornale degli Economisti e Annali di Economia*, vol. 58, pp.329-53.
Putnam R. (1996), *La tradizione civica nelle regioni italiane,* Mondadori, Milano.
Romp W., J. De Haan, “Public Capital and Economic Growth: A Critical Survey”, *Perspektiven der Wirtschaftspolitik*, vol. 8, pp. 6-52.
Smeral E. (2003) "A Structural View of Tourism Growth", *Tourism Economics*, vol. 9, pp. 77-93.
Smeral E., A. Weber A. (2000) "Forecasting International Tourism: Trends to 2010", *Annals of Tourism Research*, vol. 27, pp. 982-1006.
Torrisi, G. (2009). "Public infrastructure: definition, classification and measurement issues." University of Catania, DEMQ. Mimeo.
Verbeke J., (1995), "Reports. Tourism development in Vietnam", *Tourism Management*, vol. 16, pp. 315-325.

APPENDIX: LIST OF VARIABLE

AIRP: number of airports
CGTURAVE: average annual public spending (1996 to 2007) for tourism in current account
EXHOT: number of tourist accommodation structures different from hotels
EXHOTBED: number of beds in EXHOT
HIGHW: km of higheways
HOT: number of hotel
HOTBED number of beds in HOT
HOTTOT: number of tourist accommodation structures (HOT+EXH)
INFRACOMPPRINC: first principal component computed on specific transport infrastructures (roads, higheways, rail, ports, airports)
KGTURSUM: Cumulated public spending for tourism in capital account (1996 to 2007)
PORT: number of ports
PRES##: tourist presences in year ##
PUTN: Putnam index for social capital
RAIL: km of railways
ROAD: Km of roads
SHARE4-5STARH: share of 4 and 5 star hotel on the number of hotel
TOTBED: number of beds in HOTTOT
VATUR: value added in the sector of tourism
UNESCODU: dummy variable for the presence of sites under the UNESCO recognition
WORKTOUR: workers employed in the tourism sector
XKPUB: Index for total public capital stock per capita
XKTOT: Index for total capital stock per capita

D* : Variation over time (2006 or 2007 w.r.t. 1996) of variable *
IND_*: Index for variable *
VP_: Percentage variation of variable * (2006 or 2007 w.r.t. 1996)

*POP : * per resident
*SUP : * normalised according to the territorial surface