

**Smart specialization and tourism:  
understanding the priority choices in EU regions**

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**Abstract**

Recently in the European context, the *smart specialization* has become a key concept within the reformed EU Cohesion Policy (Foray, 2014; McCann and Ortega-Argilés, 2015). These new place-based policy thinking aimed at changing governance behavior is based on a bottom-up approach where key stakeholders developed a shared vision by means of a dynamic and entrepreneurial discovery process. These strategies focus on the prioritization of public resources in knowledge investments on particular activities in order to strengthen comparative advantages in existing or new areas. To this purpose, for its ability to foster local development based on their regional potentialities a growing number of regions are choosing the tourism sector as the S3 key strategic priority. However, it is not so clear whether this choice has an economic justification for all regions considering tourism as priority. It is not clear whether tourism in those regions represents a real comparative advantage.

The aim of the present paper is twofold. Firstly, it examines the regions that have chosen tourism-related strategies as priority based on information provided by the “RIS3 Smart Specialization Platform”. In 2018, these were 89 NUTS-2 covering regions from 16

European Member States. The paper offers an illustration of the profile of this heterogeneous group of regions, with the aim to create a categorization that allows group comparisons. Secondly, by the use of discrete choice panel data models, the paper investigates regional determinants affecting the probability to choose tourism as one of their S3 priorities.

Results indicate that geographical, economic, institutional and tourism variables matter. In particular, lagging, capital regions and islands have the highest probability to choose tourism as priority. The institutional quality and GDP per capita have a negative relationship with this choice. Regions where the labor productivity grew by at least 5% more than the Frontier region and those with a strong national tourism sector show a positive relation.

**Keywords:** Cohesion policy, European Union, Innovation, discrete choice model, Smart specialization, Tourism.

**JEL Classifications:** L83, O31, O33, R11, R58, Z32.

## 1. Introduction

In 2012 the EU “Guide to Research and Innovation Strategies for Smart Specializations” defined the RIS3 as *integrated, place-based economic transformation agendas*, having five main characteristics: 1) focus on key national/regional priorities; 2) emphasis on each country's/region's strengths, competitive advantages and potential for excellence; 3) encouragement of technological and practice-based innovation to stimulate private sector investment; 4) involvement of stakeholders and 5) inclusion of monitoring and evaluation systems. According to the European Commission this new policy approach has become a key instrument for place-based development (EC-JRC, 2016). The smart specialization (SS) has been defined *as the capacity of an economic system to generate new specialties through the discovery of new domains of opportunity* based on regional concentration of knowledge and competences (*diversification, transition, modernization or the radical foundation of industries and or services*) *to promote structural change* (Foray, 2015). This new policy approach reverses completely the perspective of previous one in the direction of giving to territories and states opportunities to choose strategies following

their own place-based economic advantages and deciding which specific sectors to prioritize.

Potentially, a large number of regions may have interest to invest on tourism: regions having natural and cultural resources and regions already characterized by a high level of tourist flows, but also regions that would transform themselves in a tourism destination. However, the choice of tourism sector has pro and cons that need to be accounted for: on the one hand the industry is growing and seems relatively more resilient to shock or crisis respect to other sectors; on the other hands it is based on low level of capital per worker, technology, and innovation; furthermore, if tourism consumption is not properly ruled by local policies might produce negative effects on quality of life of resident population as well as various types of negatives externalities (Biagi *et al.*, 2012; Biagi and Detotto, 2014; Meleddu 2014; Biagi *et al.*, 2015). Therefore, it is likely that tourism would not necessarily be the best choice for every type of region. It is probably the best choice for regions that already have strong regional comparative advantage on tourism but only to further exploit the advantage; it is also reasonable for regions where tourism is a complementary sector. However, it might not be the right choice for weak regions without really strong tourism-based resources. To date, many regions including the vast majority of peripheral and inner areas seem to prioritize tourism development.

The present paper aims to link these prioritization decisions with the observe potential processes of transformation or regeneration appearing in these regions covering aspects connected with the industrial diversification, regional branding, new entrepreneurial activities in diversify areas and the use of Key Enabling Technologies (KETs) to increase the value added of Tourism activities in the region. Specifically, the paper explores tourism-related priorities chosen by NUTS-2 regions<sup>1</sup> and analyzes the drivers of this choice to investigate its underlying rationality. This paper contributes to the existing literature into two main ways. First, to the best of our knowledge, it is the first work that empirically investigates the relationship between smart specialization policies and tourism sector. Second, it provides a complete overview of tourism as one of the main strategies chosen by UE regions after the renewed Cohesion Policy (Sorvink and Kleibrink, 2015).

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<sup>1</sup> Nomenclature of Territorial Unit for Statistics (NUTS) defined by the European Commission.

The paper is structured as follow. Sections 2 provides a literature review on smart specialization policies with specific focus on the strategy applied at the tourism sector. Section 3 describes data used and offers a taxonomy of tourism regions based on geographic, economic, institutional and tourism characteristics. Section 4 describes the methodology and Section 5 show main results and some robustness checks. Finally, Section 6 summarizes the main findings and presents some comments in the light of the recent literature. Limitations and further developments are also included.

## **2. Smart specialization strategies in tourism: a literature review**

The literature examined in the Section 2.1 is mostly policy-oriented and does not include specific analysis on sectors such as tourism. It is recently recognized that SS in tourism has so far received little attention in the literature and there is a research gap (Benner, 2017; Weidenfeld, 2018). Indeed, to the best of our knowledge, the relationship between SS and tourism has been object of only six papers up to now. The analyses included in these works use different methodologies, answer to different research questions and focus on country (Benner, 2017), regional level (Romão and Neuts, 2017; Bellini *et al.*, 2017), and, the majority of cases on single case study (Del Vecchio and Passiante, 2017; Borseková *et al.*, 2017; Benner, 2017). One of the first published paper by Del Vecchio and Passiante (2017) analyses the case of Apulia, an Italian region located in Southern part of the country, famous as sea-side tourist destination. As research question, authors state that “it must first be determined whether tourism is a vocational sector for Apulia and how it can be developed as a primary contribution to attaining the region’s intelligent growth objectives” (p. 164). Even though the question is of primary importance in that context, the paper only describes the attractiveness of the region by listing natural, cultural and agro-food heritage as a good reason for classifying Apulia as tourism region. Conclusions underline the need to introduce SS opportunities into the region without any specific indication about the specific strategy. Borseková *et al.* (2017) focus on Slovakia and link tourism and economic development driven by innovation and SS strategies. According to the authors, tourism is the only possible way to provide development, employment and well-being in peripheral regions. Qualitative analysis demonstrates that potentially Slovakian regions have competitive advantages in tourism but need to improve innovation capacity in order to grow in tourism competitiveness.

Romão and Neuts (2017) investigate tourism specialization of 252 NUTS-2 regions in 2011 to understand the link between tourism, smart specialization and sustainable development in the direction of Millennium Goals (Romão and Neuts, 2017). Results of a structural equation model (SEM) show that different regional patterns coexist in tourism dynamics: on the one side regions with high specialization in tourism have the problems of low human capital workforce, low innovation and low value added generated by the sector; on the other side, regions with high level of human capital but not necessarily specialized in tourism, are able to generate higher innovation and value added in tourism respect to the previous types of regions. Overall, those findings suggest that the level of human capital of the regions matters for the success of tourism and smart specialization in reducing economic divide and in obtaining sustainable development in the direction of the achievement of millennium goals.

Bellini *et al.* (2017) study the linkage between tourism, smart specialization and territorial resilience in the EU regions. By using data gathered from the S3 Platform they focus on regions that chose tourism as strategic sector for regional smart specialization growth. The study is based on a sample of 80 regions/countries on a total of 202 regions registered in the platform by May 2016. By analyzing the documents available in the platform, the authors perform a qualitative and descriptive analysis on five policy approaches: 1) tourism modernization, 2) tourism for innovation culture, 3) tourism-pulled innovation, 4) tourism-generating innovation and 5) tourism moderation. The main contribution of the paper regards the provision of a conceptual framework that links tourism innovation policies and local economic resilience (supported by some examples). Despite the work is based on a descriptive analysis (and despite tourism sector is known to be more labor than capital intensive and with low content of innovation), the authors conclude that tourism sector can be used among the key sectors to pursue smart growth and resilient economies.

Benner (2017) focusing on three tourist destinations located respectively in Cyprus, Israel and Tunisia considers tourism as possible key sector to obtain smart specialization thanks to its ability to generate agglomeration economies. Specifically, involving firms of the same but also of different sectors, tourism consumption is able to boost cluster and to develop urbanization as well as localization economies. The author points out the importance to have sensitive institutions to tourism development.

Weidenfeld (2018) classifies three possible diversification strategies regions might follow in choosing tourism as smart specialization strategy: 1) diversification across related tourism sub-sectors (intra-industry); 2) diversification across tourism and other sectors (inter-industry); 3) tourism as catalyst across other non-tourism sectors. In the context of SS, each region should select the appropriate approach *depending on the extent to which tourism is concentrated or diverse in destinations* (p. 15). This framework can be used in further researches to describe and understand the rationale of regional choices as well as the role of tourism in SS.

Overall, the literature agrees on the potential of tourism as driver for smart growth. The role of institutions is seen as crucial to pursue this purpose. However, none of these previous works investigate which kind of regions is prioritizing tourism as key strategy. Indeed, the success of tourism-related strategies depends on the characteristics of regions in terms of economic and socio-demographic, cultural structure as well as institutional and geographic features.

### 3. Data

The selection of regions that chose a tourism-related activity as priority come from the Smart Specialization Platform (Eye@RIS3)<sup>2</sup>. This tool has been created by the European Commission in 2011 to support countries/regions in developing and reviewing their strategies and finding potential partners for collaboration. S3 Platform has been revised in September 2018 and according to this last update the Platform contains information on 179 regions and 18 countries<sup>3</sup>. It is worth noticing that the implementation of the policy depends on each Member State's institutional and territorial organization as well as on the administrative level responsible for the competences on R&D and innovation (NUTS-1, 2 or 3). Moreover, the registration in the Platform is not compulsory and the number of registered regions is constantly increasing.

The analysis focuses on NUTS-2 regions; only in few specific cases the only information available was at country level (i.e. Cyprus, Estonia, Latvia, Lithuania, Luxembourg and Malta). In total we collect data on 276 EU-28 regions.

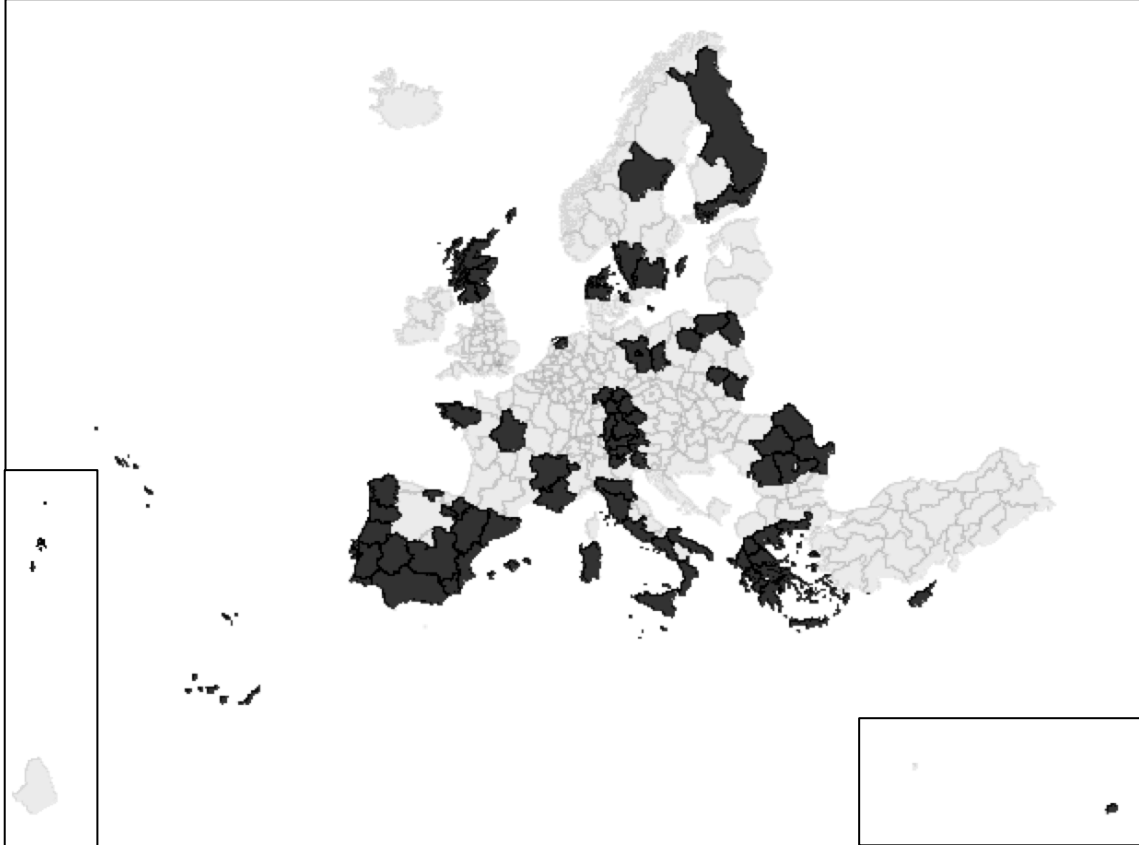
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<sup>2</sup> For more information see the website of the S3 Platform: <http://s3platform.jrc.ec.europa.eu/home>.

<sup>3</sup> Data used in this work have been retrieved on 26 September 2018, since that moment information could have changed.

Figure 1 shows regions that prioritize tourism as strategic policy, in total 89 regions out of 276, the 32% of the total number of European regions and, more specifically, the 43% of the total number of NUTS-2 regions registered in the S3P.

**Figure 1.** European NUTS-2 regions choosing a tourism-related priority in S3P



Notes: darker color represents regions choosing tourism as priority. To better show regions into the map, the boxed islands (Guadalupe and Martinique on the South West side; and Reunion in the South East) were repositioned.

### *3.1 A taxonomy of tourism regions*

As shown in Figure 1, does not exist a single pattern that identify tourism regions in Europe. However, if we search for similar characteristics, these regions can be clustered according to some geographical, economic, institutional and tourism similarities (see Table 1 for a description of variables used in this analysis).

**Table 1.** Descriptive statistics of variables

Variable	Obs	Mean	Std. Dev.	Min	Max
<i>Geographical variables</i>					
Density	89	199.5011	439.6676	5.2	3,811.3
Mostly Urban	89	.247191	.4338228	0	1
Mostly Intermediate	89	.258427	.4402502	0	1
Mostly Rural	89	.4831461	.5025471	0	1
Islands	89	.2022472	.4039514	0	1
Capital	89	.0786517	.2707195	0	1
<i>Economic variables</i>					
GDP per capita	89	23,374.16	8,406.295	9,100	47,600
Lagging	89	.3595506	.4825875	0	1
Club Very High	89	.0561798	.2315732	0	1
Club High	89	.1123596	.3175976	0	1
Club Medium	89	.4044944	.4935746	0	1
Club Low	89	.4269663	.4974398	0	1
Frontier	89	.0449438	.2083546	0	1
Catching up	89	.4157303	.4956398	0	1
Diverging	89	.258427	.4402502	0	1
Keeping pace	89	.247191	.4338228	0	1
More developed	89	.5168539	.5025471	0	1
Transition	89	.1685393	.3764655	0	1
Less developed	89	.3146067	.46699	0	1
Innovation Leaders	84	.2142857	.4127903	0	1
Innovation Strong	84	.1666667	.3749163	0	1
Innovation Moderate	84	.4642857	.5017182	0	1
Innovation Modest	84	.1547619	.3638498	0	1
<i>Institutional variables</i>					
Quality of Government	89	-.1120178	1.018118	-2.37024	1.638
<i>Tourism variables</i>					
Tourism GDP contribution	89	3.891011	2.132681	1.5	13.8
Total accommodation	88	2,223.523	2,536.252	55	12,653
Total number of beds	88	139,259.6	157,204.7	5,049	764,379
Arrivals	82	3,849,620	4,413,695	156,650	19,839,981
Nights of stay	84	13,357,039.92	17,506,100.3	377,928	89,812,124
LQ Tourism	88	1.060258	.3972481	.126365	2.464278
LQ HoReCa	86	1.132828	.4999503	.5659468	3.12887



**- Geographical characteristics:**

The most part of these regions are located near to the coast. It is well-known that sea and sand-based tourism is predominant in the Southern and Mediterranean European countries. This sample includes the quasi total number of islands (72%), overall tourism can be considered the driving sector for islands such as Balearic Islands and Canarias in Spain; Sardinia and Sicily in Italy; Ionian Islands, Southern and Northern Aegean, and Crete in Greece; Martinique, Guadalupe and Reunion in France.

**- Economic characteristics:**

The majority of regions has a medium-low GDP per capita with respect to the European average (83%). Only 7 capital regions are included in the group (Hovedstaden-Copenhagen, Berlin-Berlin, Attica-Athens, Lazio-Rome, Cyprus-Nicosia, Malta-Valletta and Lisbon-Lisbon). In terms of labor productivity growth rate, the most part of the regions are classified as “*catching up*” since they grow at least 5% more than the “*Frontier*” regions. As far as the “eligibility” for ERDF and ESF in the period 2014-2020 is concerned, more than half of the regions are classified as “More developed” (52%), while the 31% as “Less developed”.

**- Institutional characteristics:**

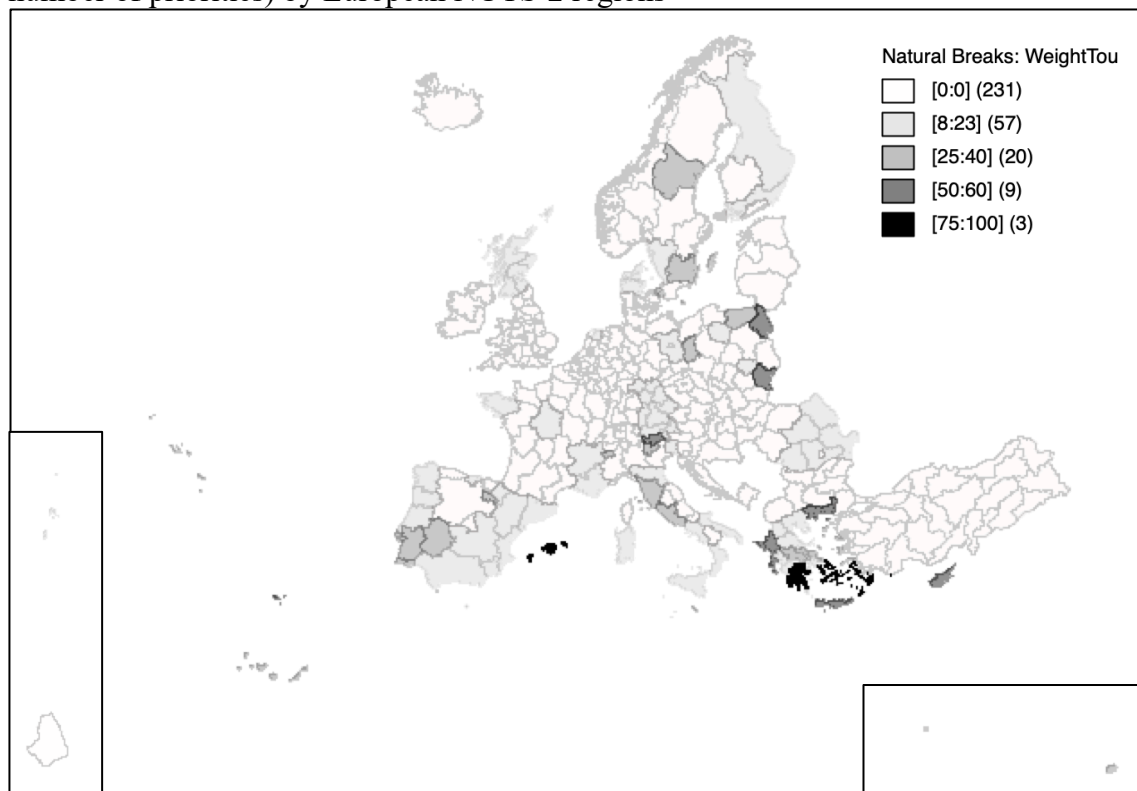
Considering the Quality of Government Index (QoG), issued by the Quality of Government Institute of the University of Gothenburg as well-known measure of the performance of regional institutions, the sample shows a low poor institutional quality with respect the European average. The index is composed by four main governance categories: control of corruption, rule of law, government effectiveness and government accountability (Rodriguez-Pose *et al.* 2014).

**- Tourism characteristics:**

Thanks to the information provided by S3P, it was possible to analyze not only regions that prioritized tourism, but also the total number of priorities chosen by these regions. The ratio between the number of tourism related priorities and the total number of priorities in each region can be considered as a proxy of regional concentration of tourism sector. Figure 2 shows the heterogeneity of this indicator by using four classes: 8-23% and 24-40% as low level of concentration and 50-60% and 75-100% as medium-high level concentration. On the one hand, a large group of regions shows a low level of concentration. This could mean that in some tourism destinations the aim is to diversify

tourism and other sectors (inter-industry). This kind of strategy has been chosen for example by Catalunya, Andalusia and Canarias in Spain; by Tuscany, Lazio, Emilia-Romagna, and Tirol in Italy; by Algarve in Portugal; and by Rhone-Alpes, Provence-Alpes and Côte d'Azur in France. Or tourism could be seen as catalyst for diversify other non-tourism sectors, in regions where tourism is a complementary sector among other productive systems (Comunidad Foral de Navarra, Berlin, Apulia, Scotland). On the other hand, only few regions chose tourism as quasi unique area of investment and development and hence present a high level of concentration: Balearic Islands, Peloponnesus, Madeira, Crete. In this case, as explain by Weidenfeld (2018), regions can diversify across related tourism sub sectors (intra-industry).

**Figure 2.** Maps of weighted decisions (number of tourism related priorities over total number of priorities) by European NUTS-2 regions



Notes: values considered for the natural brakes are percentages; in parenthesis the number of observations for each class. To better show regions into the map, the boxed islands (Guadalupe and Martinique on the South West side; and Reunion in the South East) were repositioned.

#### 4. Methodology

This and the following section empirically analyze the drivers of the choice of tourism as smart specialization strategy at regional level:

$$Tourism\ Priority_i = f(G_i + E_i + I_i + T_i) \quad (1)$$

where:

*Tourism Priority* = is a dummy variable that values 1 if the region *i* chose a tourism-related activity as strategic priority in the S3P

*G* = geographical and demographic variables

*E* = economic variables

*I* = institutional variables

*T* = tourism variables at regional and national level

The probability to prioritize tourism sector depends on the geographical location of the region, their resource endowments (specifically natural and cultural-based resources) as well as their demographic structure. It depends also on the actual economic structure including the innovation capacities of the region, on institutional factors and on the role that tourism already plays at regional and national level.

The empirical model proposed in the present paper investigates which regional characteristics affect the decision to choose tourism as smart specialization strategy to the aim of indirectly understand whether this decision is likely to be a success one or not.

A detailed description of the variables employed in the model is provided in Table 2. As shown in the equation 1, four categories of explanatory variables are employed. geographical and demographic variables control for regional population per square kilometers (POPULATION DENSITY); a dummy that takes value 1 if the region is an island (ISLANDS); a dummy that takes value 1 if in the region locates the capital of the country (REGIONAL CAPITAL); a dummy that takes value 1 if the 50%-70% of the population lives in a metropolitan area (MOSTLY INTERMEDIATE); a dummy that takes value 1 if less than 50% of the population lives in a metropolitan area (MOSTLY RURAL).

Economic variables control for gross domestic product in purchasing power standard per inhabitant (GDP PER CAPITA); a dummy variable that takes value 1 if the labor

productivity in the region grew at least 5% more than in the frontier regions (CATCHING-UP); a dummy variable that takes value 1 if the labor productivity in the region grew between 5% more or less with respect to the frontier (KEEPING PACE); a dummy variable that takes value 1 if the labor productivity in the region dropped by at least 5% than the Frontier (DIVERGING); a dummy variable that takes value 1 if the region had a GDP per capita higher than 90% of the European average in the years 2007-2009 and hence was considered more developed in the classification for the eligibility for ERDF and ESF during the programming period 2014-20 (MORE DEVELOPED); a dummy variable that takes value 1 if the region had a GDP per capita between 75% and 90% of the European average in the years 2007-09 and hence was considered for founds eligibility as transition (TRANSITION REGIONS). Finally, some indicators of innovation are controlled for, such as regional innovation that can be considered as continuous variable (REGIONAL INNOVATION SCOREBOARD) and four dummies: INNOVATION LEADER if the regions present a relative performance greater than 20% the EU average; STRONG INNOVATORS if regions present a relative performance between 90% and 120% of the EU average; MODERATE INNOVATORS if regions show a relative performance between 50% and 90% of the EU average; MODEST INNOVATORS if regions show a relative performance below 50% of the EU average. The institutional variable is the Quality of Government index (QoG) given by the University of Gothenburg. It represents an indicator of regional institutional quality and ranges between 2.6 and -2.8. In the present model the QoG index has been used to control for a composite variable that takes value 1 if a region presents a low value of QoG and is a lagging region (QoG\_LOW\*LAGGING).

As far as tourism is concerned, two variables are included into the model: the number of nights of stay per 100 inhabitants, that will capture the tourism demand at regional level (NIGHTS OF STAY PER CAPITA) and a measure of the tourism contribution in terms of total GDP at country level, to capture tourism vocation (TOURISM GDP CONTRIBUTION).

**Table 2.** Variables and data sources

Variable	Year	Source	Definition
<i>Dependent variable</i>			
Tourism Priority	2013	RIS3 Platform	1=if the region has prioritized tourism; 0=otherwise
<i>Geographical and demographic variables</i>			
Population density	2013	Eurostat	Population/Km <sup>2</sup>
Islands	t.i.		1=island; 0=otherwise
Regional Capital	t.i.		1=regions where the capital of the country locates; 0=otherwise
Mostly intermediate	2014	OECD	1=if between 50% and 70% of their pop. lives in a metropolitan area; 0=otherwise
Mostly rural	2014	OECD	1=if less than 50% of their pop. lives in a metropolitan area; 0=otherwise
<i>Economic variables</i>			
GDP per capita	2013	Eurostat	GDP purchasing power standard (PPS) per inhabitant
Catching-up (Labor product.)	2000-15	OECD	1=labor productivity grew by at least 5% more than the Frontier; 0=otherwise
Keeping pace (Labor product.)	2000-15	OECD	1=labor productivity grew within +/-5% with respect to the Frontier; 0=otherwise
Diverging (Labor product.)	2000-15	OECD	1=labor productivity dropped by at least 5% than the Frontier; 0=otherwise
More developed (GDP PPS)	2007-09	Eurostat	1=if GDP per capita was higher than 90% of the EU-27 average in 2007-09 (regional eligibility for the ERDF and ESF during the programming period 2014-20); 0=otherwise
Transition regions (GDP PPS)	2007-09	Eurostat	1=if GDP per capita was 75%-90% of the EU-27 average in 2007-09 (regional eligibility for the ERDF and ESF during the programming period 2014-20); 0=otherwise
Regional Innovation Scoreboard	2013	European Commission	Continuous variable or 4 dummy variables: 1=Innovation Leader: regions with a relative performance more than 20% above the EU average; 1=Strong Innovators: regions with a relative performance between 90% and 120% of the EU average; 1=Moderate Innovators: regions with a relative performance between 50% and 90% of the EU average; 1=Modest Innovators: regions with a relative performance below 50% of the EU average.
<i>Institutional variables</i>			
Quality of government index (QoG)	2013	Quality of Government Institute	Index composed by four governance categories: control of corruption, rule of law, government effectiveness and government accountability. 0 = EU average
Interactions between low QoG and lagging regions	2013	Our elaboration	Dummy variable that values 1=if a region is at the same time lagging and shows a low level of QoG (below the EU average)
<i>Tourism variables</i>			
Nights of stay	2013	Eurostat	Number of nights of stays per 100 inhabitants
Tourism GDP contribution	2013	WEF	Share of travel and tourism GDP contribution to the national GDP

Note: t.i.= time invariant; RIS, Research and Innovation Strategy for Smart Specialisation; OECD, Organization for Economic Co-operation and Development; WEF, World Economic Forum.

## 5. Results

Table 3 shows the regression results obtained by performing a logit model. Odds ratio and marginal effects are both reported. The odds ratio are defined as  $OR = e^{\beta_i}$ . When an odds ratio values less than one (the coefficient shows negative sign) the probability to choose tourism as priority is less likely than the probability to prioritize another sector. On the opposite, when an odds ratio is greater than one (the coefficient shows a positive sign) the probability to choose tourism as priority is more likely than the probability to choose another area of specialization. When the odds ratio is exactly one, this implies that the odds are even. *Ceteris paribus*, for continuous variables, an odds ratio greater than one suggests that the probability of a successful event increases as the value of the continuous variable increases. For dichotomous variables, an odds ratio greater than one indicates that the probability of success is higher than for the reference group. Marginal effects are useful to measure how much the dependent variable changes due to one-unit change of the explanatory variable.

The dependent variable *Tourism Priority* is defined as  $Y_i = (Y_1, Y_2)$ : where  $Y_1$  takes the value one if region  $i$  chooses a tourism as priority in the S3 platform; and  $Y_2$  takes the value zero if region  $i$  chooses another area of specialization. The estimation does not consider regions that are not registered into the S3 Platform (29 in total). As the Table 3 shows, two main models have been performed: Model 1 does not consider the variables controlling specifically for the type of innovation of the region; in Model 2 all variables are included. The first column of the two models shows the marginal effects, while the second column reports the odds ratio.

Within the geographical variables, the coefficient of *islands* and *regional capital* are positive and statistically significant in both specifications. The positive sign indicates that regions located in islands as well as regions where the country capital is located are more likely to choose tourism as priority. While for the case of islands the positive sign is probably explained by the resource endowments which naturally give them a comparative advantage in tourism, the interpretation of the second variable is less straightforward. It is likely that the capitals of regions prioritize tourism as a way to diversify economic activities.

Among the economic variables, *GDP per capita* is negative and statistically significant in Model 2 only. The negative sign suggests that the lower the GDP per capita, the higher

the probability for a region to choose tourism as priority. Moreover, the coefficient of *Catching-up* variable is positive and statistically significant, meaning that those kinds of regions are more likely to choose tourism as area of specialization than *Frontier* regions. In Model 1 a negative and statistically significant coefficient is found for regions that are classified as *Transitions* for the ERDF and ESF eligibility during the programming period 2014-2020. This result indicates that those kinds of regions are less likely to choose tourism as priority with respect to those classified as *Less developed*.

When controlling for the degree of innovation (Model 2) results show that innovation does not impact on the choice of tourism this is probably due to the fact that the content of innovation of tourism firms is very low.

The institutional variable measured as an interaction variable between quality of government below the European average and lagging regions, is the variable affecting more the choice to specialize in tourism for a region. This expected result empirically confirm the intuition of McCann and Ortega Argiles (2015): “For very isolated regions, however, the smart specialization argument appears to offer only very limited possibilities, because the lack of scale is likely to reduce the effectiveness of the policy approach. In these cases, rather than funding R&D, the priorities might centre on the promotion of connectivity in certain natural environmental or tourism activities” (p. 1298). Moreover, a recent analysis has demonstrated that low institutional capacity in European lagging regions might not represent a limitation for future development (Rodriguez-Pose and Ketterer, 2018).

As the results suggests by looking at the tourism variables (*Nights of stays* and *Tourism GDP contribution*) regions that are already a tourism destination are more likely to prioritize tourism as strategy. Unfortunately, at this stage we cannot distinguish to what extent tourism as priority is chosen to pursue complementarity (or intra-industry strategy according to the definition of Weidenfeld, 2018) or diversification or inter-industry strategy according to the definition of Weidenfeld, 2018).

### 5.1. Robustness checks

The robustness of the results has been checked using a probit model based on the “standard normal” distribution rather than the “logistic” distribution. Table 4 shows that the obtained findings are consistent with previous ones specifically as far as the variable

of interest are concerned. The results of the variables *QoG\_Low\*Lagging* and *Tourism GDP* confirm to be the most significant drivers. Overall, as Table 5 reports, the two models are very similar, and this is also confirmed by the weak difference between AICs and BICs. In terms of goodness of fit, the McFadden's pseudo R-squared suggests in both specifications and for both models estimated a very good model fit.



**Table 3.** Logit regression results: marginal effects and odds ratio

Model	1		2	
<i>Dependent variable</i>	Regional Tourism Priority		Regional Tourism Priority	
	Marginal effects	Odds Ratio	Marginal effects	Odds Ratio
<i>Geographical and demographic variables</i>				
Population density	-0.0005 (0.0005)	.9994952 (.0005465)	-0.0004 (0.0006)	.9995785 (.0005839)
Islands	2.2* (1.2)	9.29688* (11.35073)	2.2* (1.3)	8.752297* (11.15299)
Regional capital	3.0** (1.5)	20.55632** (30.54969)	2.5* (1.5)	12.61224 * (18.53098)
Mostly Intermediate	0.3 (0.5)	1.334062 (.7093799)	0.3 (0.6)	1.286588 (.7181586)
Mostly Rural	0.2 (0.5)	1.251074 (.6653687)	0.01 (0.6)	1.010708 (.5683849)
<i>Economic variables</i>				
GDP per capita	-0.00009 (0.00006)	.9999055 (.0000578)	-0.0001** (0.00006)	.9998821 ** (.0000584)
Catching-up (Labour productivity)	2.8** (1.3)	16.79458** (22.49724)	2.4* (1.3)	11.13544 * (14.89766)
Keeping pace (Labour productivity)	1.7 (1.3)	5.506627 (7.296196)	1.1 (1.3)	2.977267 (3.980303)
Diverging (Labour productivity)	1.7 (1.3)	5.714.513 (7.545833)	1.5 (1.3)	4.610575 (6.15008)
More Developed regions	0.5 (1.0)	1.707804 (1.659162)	1.3 (1.0)	3.679342 (3.768138)
Transition regions	-1.8** (0.9)	.1597254** (.147679)	-1.3 (1.0)	.2787392 (.2725961)
Innovation leaders (RIS)			0.9 (1.2)	2.484585 (2.944592)
Innovation Strong (RIS)			-1.0 (1.1)	.3863769 (.4215471)
Innovation Moderate (RIS)			-0.10 (0.9)	.9062163 (.8365183)
Regional Innovation Scoreboard (RIS)	0.01 (0.01)	1.013212 (.0121491)		
<i>Institutional variables</i>				
QoG_Low*Lagging	2.5*** (0.8)	11.63126*** (8.760165)	2.1*** (0.8)	8.530737*** (6.449382)
<i>Tourism variables</i>				
Nights of stay per capita	0.0006* (0.0003)	1.000558* (.0003262)	0.0007** (0.0004)	1.000729** (.0003704)
Tourism GDP contribution	0.5*** (0.2)	1.672711*** (.2741112)	0.6*** (0.2)	1.826822*** (.3467149)
Constant	-3.9** (1.9)	.0204553** (.0379543)	-2.4 (1.8)	.0917921 (.166748)
Observations	191		191	
AIC	204.592		200.982	
BIC	256.629		259.523	
LR Test	(df=15)=87.136		(df=17)=94.747	
	p-value = 0.000		p-value = 0.000	
Pseudo R <sup>2</sup>	0.3355		0.3648	

Note: Standard errors in parentheses \*\*\* p&lt;0.01, \*\* p&lt;0.05, \* p&lt;0.1

**Table 4.** Robustness check: Probit regression results

<b>Model</b>	<b>1</b>	<b>2</b>
<i>Dependent variable</i>	Regional Tourism Priority	Regional Tourism Priority
<i>Geographical and demographic variables</i>		
Population density	-0.0003 (0.0003)	-0.0003 (0.0003)
Islands	1.3* (0.7)	1.3* (0.7)
Regional capital	1.8** (0.9)	1.5* (0.9)
Mostly Intermediate	0.2 (0.3)	0.1 (0.3)
Mostly Rural	0.1 (0.3)	-0.003 (0.3)
<i>Economic variables</i>		
GDP per capita	-0.00006* (0.00003)	-0.00007** (0.00003)
Catching-up (Labour productivity)	1.7** (0.8)	1.5* (0.8)
Keeping pace (Labour productivity)	1.0 (0.8)	0.7 (0.8)
Diverging (Labour productivity)	1.0 (0.8)	0.9 (0.8)
More Developed regions	0.4 (0.6)	0.8 (0.6)
Transition regions	-1.0* (0.5)	-0.6 (0.5)
Innovation leaders (RIS)		0.5 (0.7)
Innovation Strong (RIS)		-0.5 (0.6)
Innovation Moderate (RIS)		-0.03 (0.5)
Regional Innovation Scoreboard (RIS)	0.007 (0.007)	
<i>Institutional variables</i>		
QoG_Low*Lagging	1.4*** (0.4)	1.3*** (0.4)
<i>Tourism variables</i>		
Nights of stay per capita	0.0003* (0.0002)	0.0004* (0.0002)
Tourism GDP contribution	0.3*** (0.09)	0.3*** (0.1)
Constant	-2.3** (1.1)	-1.5 (1.1)
Observations	191	191
AIC	204.057	201.228
BIC	256.093	259.769
LR Test	LR(df=15)=87.672 p-value= 0.000	LR(df=17)=94.501 p-value= 0.000
Pseudo R <sup>2</sup>	0.3376	0.3638

Note: Standard errors in parentheses \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

**Table 5.** Comparison between logit and probit

	Model 1		Model 2	
	Logit	Probit	Logit	Probit
Logit	1.0000		1.0000	
Probit	0.9996*	1.0000	0.9989*	1.0000

Note: \* specifies that the correlation coefficients are significant at the 5% level or lower

## 6. Conclusions

The present work analyzes information gathered by the S3 Platform to investigate the characteristics of regions that chose tourism as strategic priority in the context of the Smart Specialization policy and to understand the determinants of the choice.

Results show that tourism is considered as priority for a large number of EU regions and that these regions have not homogeneous characteristics. Tourism is the strategic choice of already developed tourism destinations as well as regions with no tourism specialization. Therefore, no specific relationship emerges between tourism concentration and the choice of tourism as priority. This result is in line with the general aim of SS as tool for diversifying local economies. Unfortunately, at this stage of the work is not possible to disentangle whether regions are focusing more on specialization or diversification.

Furthermore, the determinants/characteristics of regions choosing tourism as priority are: to be islands and capital of regions (G); to have a lower GDP per capita and to be catching-up (E); to have a low quality of Government and to be lagging regions (I); to be a tourism destination (Nights of stays) and to belong to a tourism country (Tourism GDP contribution).

A recent analysis demonstrates how low institutional quality in European lagging regions does not represent a strong handicap for future development (Rodriguez-Pose and Ketterer, 2018). The voluntary registration at the RIS3 might indeed improves the quality of government since the required promotion of transparency and accountability can actually reduce corruption that is a common problem of regions with low quality government. Moreover, when the quality of government increases, innovation increases accordingly, and this is might be even more evident in peripheral than in core regions.

For these reasons, the success of the smart specialization strategies is likely also for regions that chose tourism as priority.

The limits of the present paper are twofold. The first one is linked to the S3 Platform, which is the main source of the analysis. The chosen priorities might not be approved by the EU Commission, therefore they might change accordingly. The second one relates to the impossibility to tackle the very crucial issue of related or unrelated diversification. A further development of this work could go in these two directions: 1) to analyze some case studies to understand if the chosen priorities have been actually implemented and 2) to distinguish between related and unrelated diversification to examine under which conditions tourism sector can be considered the right strategy in the long run.

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## Appendix

**Table 1A.** Top ten of NUTS-2 regions in tourism specialization

	<b>Tourism demand (Arrivals)</b>	<b>Tourism demand (Nights)</b>	<b>Tourism supply (Accommodation)</b>	<b>Tourism supply (Bed)</b>	<b>Location quotient 1</b>	<b>Location quotient 2</b>
1	Île de France	<b>Canary Islands</b>	Adriatic Croatia	Adriatic Croatia	Åland Islands	Inner London West
2	<b>Catalonia</b>	Île de France	Veneto	<b>Catalonia</b>	Inner London West	Aquitaine
3	<b>Andalusia</b>	<b>Catalonia</b>	<b>Tuscany</b>	Veneto	Aquitaine	Corsica
4	<b>Côte d'Azur</b>	<b>Balearic Islands</b>	<b>Bolzano</b>	<b>Côte d'Azur</b>	Corsica	<b>Ionian Islands</b>
5	<b>Rhône-Alpes</b>	Adriatic Croatia	<b>Lazio</b>	<b>Rhône-Alpes</b>	<b>Ionian Islands</b>	<b>Algarve</b>
6	Veneto	Veneto	<b>Emilia-Romagna</b>	<b>Toscana</b>	Bratislava Region	<b>Southern Aegean</b>
7	<b>Upper Bavaria</b>	<b>Côte d'Azur</b>	<b>Southern Aegean</b>	Languedoc-Roussillon	<b>Algarve</b>	<b>Bolzano</b>
8	Lombardy	<b>Andalusia</b>	Lombardy	Aquitaine	<b>Southern Aegean</b>	Prague
9	<b>Tuscany</b>	<b>Rhône-Alpes</b>	West Wales and The Valleys	<b>Andalucía</b>	<b>Bolzano</b>	<b>Balearic Islands</b>
10	<b>Canary Islands</b>	<b>Tuscany</b>	<b>Tyrol</b>	<b>Balearic Islands</b>	<b>Rhône-Alpes</b>	City of Brussels
	70%	60%	60%	60%	50%	50%

Note: in bold regions that chose tourism in S3P.

LQ1=Location Quotient computed by using transports, accommodation, food and beverage, rental, travel agencies and tour operators' services.

LQ2=Location Quotient 2 computed by using HORECA services (Hotel, Restaurants and Catering).

**Table 2A.** NUTS-2 regions that chose tourism in S3P, overnights per 1,000 inhabitants above the EU average

	<b>Region</b>	<b>Country</b>
1	Southern Aegean	Greece
2	Balearic Islands	Spain
3	Bolzano	Italy
4	Ionian Islands	Greece
5	Tyrol	Austria
6	Canary Islands	Spain
7	Salzburg	Austria
8	Algarve	Portugal
9	Crete	Greece
10	Trentino	Italy
11	Madeira	Portugal
12	Valle d'Aosta	Italy
13	Malta	Malta
14	Cyprus	Cyprus
15	Tuscany	Italy
16	Côte d'Azur	France
17	Northern Aegean	Greece