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SOURCES OF COMPETITIVENESS IN TOURIST LOCAL SYSTEMS: AN APPLICATION TO ITALY

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Abstract. Marshall (1890) described the existence of some concentrations of small and medium enterprises specialised in a specific production activity in certain districts of the industrial English cities. Italian scholars have paid particular attention to this local system of production coined under the term "industrial district". In other countries, related territorial models have played a central role as the "milieu" (French, Swiss) or the "geographical industrial clusters" (EEUU). We explore the extension of these territorial models to the study of tourist activities in Italy, using a framework that can be easily applied to other countries or regions. The paper is divided in five sections. First, we propose a review of the territorial models applied to tourism industry and their sources of advantages. Second, we propose a model to capture these avantatges in a growth model. Third, we apply a methodology for the identification of tourist local systems and their typologies using a tourist *filiere*. Forth, we use a spatial model regarding different kinds of Italian tourist local systems (rural systems, arts cities, tourist districts) in order to measure external economies and territorial networks. Finally, conclusions and policy implications are exposed.

JEL classification: L83, R11, R12, L1;

1. Theoretical framework

From 1990, travel and tourism industry (TTI) has become one of the biggest industries of the world economy. According to the statistics from the World Tourism Organisation (2004), world tourist arrivals reached 700 millions in 2003 from 455 in 1990. Money expenditure increased from 2 billion dollars in 1950 to 480 billions in 2002. The European Commission (2000) has emphasised the challenge in order to to improve the quality of life in European regions and cities, to assure a high competitiveness and to promote a sustainable development. In this context, the study of the sources of local development has an important role.

1.1. Systemic approaches to Tourist Local Systems

In the last ten years, the international specialised literature has coined the concept of "*Tourist Destination*". In this concept, the attention is focused on the strategies and marketing actions of a place considered as a system of actors that co-operates in order to supply an integrated tourist product. The European Commission (2000:145) defines a Tourist Destination as *"an area which is separately identified and promoted to tourists as a place to visit, and within which the tourist product is co-ordinated by one ore more identifiable authorities or organisations"*[1]. Since the tourism industry is considered a sector with a fragmented structure and characterised by the presence and collaboration of a wide number of actors of the *filiere* (tour operator, travel agents, passenger carriers, hotel and other service providers), competitive advantages are more and more related to a system of local actors supplying a complex final product: the travel experience. The opportunity of a systemic territorial approach emerges focusing on *places* in order to develop a process of local economic development. In fact, territorial models of industrial origins have been recently extended to tourism industry.

[1] Original contribution regading the concept of *Destination Management* has been developed in Laws (1995), Weiermaier and Pechlaner (2000) among others. These actors analyze tourist systems as an unique group of actors localized in a common place.

1.1.1. Tourist cluster

In "the competitive advantage of nations" (1990:78), Porter defines a geographic cluster as "*... a geographic concentration of interconnected companies and institutions in a particular field*"[2]. Although cluster analysis has focused mainly on manufacturer industries, there are also some references to the tourist industry in Porter (1998). Nordin (2003) applies the Porter's diamond to the Tourist and Travel Industry (TTI) and focuses on the role of a cluster of tourist enterprises and the role of innovators. On the other hand, criticism against the Porterian approach is often strict. Martin and Sunley (2003) stated that Porter's approach is far from being universally accepted in the areas of business economics, industrial organization and management studies and that often lacks of specificity and measurability[3].

1.1.2. Milieu innovateur

The concept of *milieu* was initially developed by Aydalot (1986) and the GREMI group[4]. Some scholars of the GREMI have extended this territorial model to other sectors like culture (Costa 2002) and tourism (Peyrache-Gadeau 2003). In this last paper is explained how the presence of a spontaneous local milieu can be the "*quid"* of those successful local systems, as in industrial district approach.

1.1.3. Tourist districts

Since the seminal work of Marshall (1920), industrial districts have been described as agglomerations of small and medium enterprises specialised in a given production activity. The concept of Mashallian industrial district was recovered by Becattini (1990) and the Florentine school has played a major role in the study and diffusion of this

[2] *".. a host of linkages among cluster members result in a whole greater than the sum of its part. In a typical tourism cluster, for example, the quality of a visitor's experience depends not only on the appeal of the primary attraction but also on the quality and efficiently of complementary businesses such as hotels, restaurants, shopping outlets and transportation facilities. Because members of the cluster are mutually dependent, good performance by one can boost the success of the others".* Porter (1998:77). Although we use Porter's concept of industrial cluster, there are many approaches to this concept (Bergman and Fesser 1999).

[3] A guide for the identification and analysis of industrial clusters is provided by Bergman and Fesser (1999).

[4] Groupe de Recherche Européen sur les Milieux Innovateurs.

concept (Becattini et al. 2003)[5]. Recently, some scholars have paid a particular attention to some local development models of non-industrial origin (Bellandi and Sforzi 2003) in order to clarify the interconnection between industrial districts and the other paths of the local development.

In order to decompose a complex entity like a tourist destination, the industrial district theory can be helpful and provide a suitable interpretation key. First of all, TTI are typically based on medium and small enterprises. Secondly, these *places* are characterised by strong ties among the industrial players and the local communities. Some example of the industrial district model extended to tourism industry is in Antonioli (1999: 145) who describes the tourist district like: "[...] *one stable and reasonable thickening of relations among enterprises along time*". The enterprises are strongly rooted in the territory and each one is like a ring of the chain that forms the entire tourist local system. The presence of relations among similar agents in a small area favours the marshallian "*industrial atmosphere*", that Antonioli calls "*eno-tourist atmosphere*"[6].

1.1.4. Tourist Local Systems

The Tourist Local System (TLS) could therefore assume all these characteristics like an interpreting model and ideal type of local development of an embedded system of enterprises in tourist activities that can generate wealth and occupation, and enhance the local resources granting the advantages of the territorial models proposed: the network of actors from the Porter's cluster and the social environment from the milieu and district approaches.

In this context, in the last years, an important debate has emerged on the extension of industrial territorial models to other fields of analysis as the *cultural industries* (Lazzeretti 2003). District theory may be an interpreting key of a local system as a SME

[5] Becattini (1990:58) defined the industrial district as a: "*socio-territorial entity which is characterised by the active presence of both a community of people and a population of firms in one naturally and historically bounded area. In the district, unlike in other environments, such as the manufacturing towns, community and firms tend to merge*".

[6] *"[...] a particular state in which the information, the culture, the innovations, the abilities are transmitted and learned in an unconscious way and exchanged thanks to the indirect action of the social institutions (family, school, enterprises, associations, and so on) and to the proximity*" (Antonioli 1999:150).

cluster embedded with the social community in a territory. Following this approach, a *Tourist Local System* represents a system characterised by the presence, in its territory, of a large endowment of artistic, natural and cultural resources (Cultural, Artistic and Natural Heritage, CANH), and a network of economic, non economic and institutional actors who are specialised in tourism activities. First of all, this heritage is the basis of a competitive tourist attraction and if enhanced and preserved, it is able to create a competitive sustainable advantage and it may be a *flywheel* of development for the local community. Secondly, regarding the networks of actors, in the Industrial districts literature, there are two main pillars at the base of an industrial district: productive organisation (a system of localised and specialised enterprises that work with a flexible division of labour), and the social and institutional local environment. Therefore, a first approximation to a TLS is a group of SMEs as a strong concentration of enterprises of small and medium dimension that creates wealth and employment through the connection with the Cultural, Artistic and Natural Heritage. The cluster of enterprises will be composed by hotel, travel agency, catering firms and other firms related to the tourist business in a wide sense. Extending the approach of the author (Lazzeretti 2003) three conditions has to be tested: a) verify the presence of a consistent number of enterprises enhances the cultural, artistic and natural heritage in a tourist destination (tourism related activity); b) verify the set of enterprises composes a cluster of SMEs localized in the tourist destination; c) verify the presence of a set of economic and social relationships between the social local community (citizens) and the productive community (enterprises). In the third section we will verify the first two conditions in order to identify Tourist Local Systems in Italy[7].

1.2. Sources of competitiveness: natural resources, agglomeration and network economies

Which are the sources of the competitiveness of the TLS? Returning again to Marshall, we can differentiate between two basic sources of increasing returns in the production: internal and external economies[8]. Internal economies are produced and appropriated inside the firm. External economies describe a situation where the firms have

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[7] From this point of view, the tourist cluster, the tourist milieu and the tourist district are particular categories of tourist local system.

[8] We use the approach based on the costs for simplicity. The same terms can be applied to the quality or the innovation.

advantages coming from outside the firm. The existence of external economies allows increasing returns in an industry (sector) although their firms have perfect competition curves.

Regional and urban economics uses the concept of "agglomeration economies" to describe the advantages on the costs or the quality generated from the concentration in a point of the space of inputs, population, firms and collective agents. Although there are several taxonomies of the agglomeration economies, the most popular is the Ohlin-Hoover's one (Hoover 1937). Following this classification, we can differentiate between internal economies, localisation economies and urbanisation economies. Internal economies are generated inside the firm and arises from the size, scope, transactional advantages and firm-embeded knowledge. Localisation economies are external to the firm and often referred as internal to the industry. The original Marshallian concept of external economies refers to the localisation economies formed by a skilled labour pool, specialised suppliers and knowledge spillovers. Complementing the industry-based concept of Marshall, Ellison and Glaeser (1997) turn again to the concept of natural resources as a source of localisation advantages (Marshall 1890 Book IV; Weber 1929). On the other hand, urbanisation refers to the advantages generated by the urban environment as whole and they include three main families: urban size (Ohlin 1933; Hoover 1937), diversity (Chinitz 1961; Jacobs 1969) and infrastructures (Camagni 1992).

Following Hoover (1937), agglomeration economies show two characteristics: they are *temporally* and *spatially static*. Glaeser et al. (1992) overpass the first limitation and introduce the distinction between static and dynamic external economies[9]. On the other hand, spatial dynamics are present when we approach the city as a node in a system of cities, and not as an isolated entity. The generation of external economies related to the interaction between cities, and therefore spatially dynamic, is studied by the theories of the *network of cities* (Pred 1977; Dematteis 1989; Camagni and Salone 1993) and the theories of *spatial spillovers* (Audrestch and Feldman 1996; Fischer and Varga 2003).

[9] Theories of (temporally) dynamic externalities explain simultaneously how the cities are born and grow. Theories of (temporally) static externalities, represented by the traditional conception of localization and urbanization economies, explain the formation of cities and their specialization but not their growth. From this approach we can differentiate between localization *economies* (temporally static) and *MAR externalities* (temporally dynamic), and between *urbanization economies* (temporally static) and *Jacobs economies* (temporally dynamic) (Glaeser et al. 1992:1128).

2. Agglomeration and network economies: a knowledge-based model

De Lucio et al. (2002) introduce a firm Cobb-Douglas function and endogenously derive the index to measure the knowledge externalities: $Y_{ijt} = A_{ijt} L_{ijt}^{\alpha} K_{ijt}^{\beta}$ (1), where *Y* is the production, *L* is the labour, *K* the capital, *A* the technology, *i* is the industry, *j* is the territory, *t* represents the time and *α*, *β* are the labour and capital coefficients, assumed to be constant[10].

After the maximisation and linearization we obtain: $\ln(Y_{ijt}) = \ln(A_{ijt}) + \alpha \ln(L_{ijt}) + \beta[\ln(w_{ijt}) + \ln(L_{ijt}) + \ln(\beta) - \ln(\alpha) - \ln(r_t)]$ (2). In this model, factor prices are endogenous. The model is expressed in growth rates. Like Glaeser et al. (1992), the growth rate of the technology is assumed to depend on a local and a global component. The global component A_{global} captures exogenous changes in the technology. This local component is endogeneized and the distribution of new innovations is a linear and increasing function proportional to the past number of local innovations in the industry. The local component of labour productivity growth depends on the generation and diffusion of innovations: $dA_{ijt} / dt = A_{ijt}^{*}(g_0)$ (3), where *g* is a vector of explanatory variables including external economies. Resolving the differential equation: $A_{jit}^{local} = A_{j\,i\,t-1}^{local} e^{g(\cdot)t}$ (4), and integrating all terms we obtain:

$$\ln(Y_{ijt} / Y_{ij0}) = \beta_0 + \beta_1 \ln(L_{ijt} / L_{ij0}) + \beta_2 \ln(W_{ijt} / W_{ij0}) + \beta_3 \ln(\phi_{ijt} / \phi_{ij0}) + g(\cdot) \qquad (5)$$

, where ϕ is the productivity. If not enough information is available, we can assume a functional form with only an input (labour) $\Phi = A_{ijt} L_{ijt}^{1-\alpha}$ (6), and the model will be similar to Glaeser at al. (1992) and Henderson et al. (1995). This equation can be estimated in the usual form: $y = X\beta + u$ (7).

Although this model is time-dynamic, it neglects the mechanisms of generation, transmission, adoption and feedback of externalities and knowledge through the urban system. In order to include the space in the model, we can consider that the technology

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10 $K_{ijt} r_t / L_{ijt} w_{ijt} = \beta / \alpha$.

depends of three components: local, network and national/international: $A = A_{local} \cdot A_{network} \cdot A_{national/international}$ (8). Network component includes knowledge and other externalities generated in the other cities of the network or transmitted through the urban system. Local and network components are considered to be endogenous to the model[11]. Spatial econometrics (Anselin 1988) provides an easy way to deal with the specification of this spatial model using a matrix of spatial contacts *W*. Following the previous models, network externalities should arise from the initial conditions located in the other nodes of the network. Thus, it will take the form of a *cross regressive spatial model*: $y = X\beta + WX\gamma + u$ (9). Three additional options can be taken account. First, knowledge externalities can arise from the simultaneous growth of the sector in the other cities of the network (*spatial lag model*): $y = \rho Wy + X\beta + u$ (10). Second, these two specifications can be combined in a *regressive-regressive spatial model*, including network lags of the dependent and explanatory variables: $y = \rho Wy + X\beta + WX\gamma + u$ (11). Finally, we can consider that knowledge externalities are transmitted through stochastic shocks along the network of cities or simply that there are errors of measurement related to the space (*spatial error model*):

$$\begin{aligned} y &= X\beta + u \\ u &= \lambda Wu + \varepsilon \\ \varepsilon &\sim N(0, \sigma^2 I) \end{aligned} \tag{12}$$

All these models can be combined to produce a family of spatial models (Anselin 1988) or extended to more complex specifications. These models allow to simultaneously estimating concentration (agglomeration) and network externalities. Otherwise, it is possible to obtain that spatial effects are not significant.

3. Identification of Tourit Local Systems in Italy

In order to identify Tourist Local Systems, the Italian territory was subdivided in Local Labour Markets Areas (LLMAs) which interprets the daily work commuting flows.

[11] In the one-input model, Glaeser et al. (1992) and Henderson et al. (1995) arrive to the same functional form starting from the hypothesis that local components are exogenous

LLMAs were defined in Italy by the ISTAT on the 1991 Census[12]. We use LLMAs for three reasons (Menghinello 2002): first, LLMAs permit to go beyond the administrative definitions and refer more to the effective industrial organisation of the territory; second, LLMAs are territorial units more suitable to socio-economic analysis ad referred to intensity among residents and labour force of a place; third, they respect a rigorous methodology of identification as described in the volume of ISTAT (Sforzi 1997a)[13]. This geographical methodology is also suitable for local systems characterised by the presence of a cluster of SMEs working on tourist activities. In fact, the final object of our analysis, the Tourist Local System, is a place where persons share experiences of life and job with a sure stability in time: a local system.

After deciding the territorial unit of analysis, we must define what belong to the tourism field of activity and what is not. We can use a broad or a narrow definition of tourism definition[14]. We propose an analysis through a *filiere* departing from three digits ATECO 2002-NACE 1.1 definitions (table 1)[15].

It is expected for this simplification to be suitable and to be capable for individuating tourist local systems specialised in a broader tourist activities definition. In other words, we expect a stronger specialisation in these activities in tourist local systems. Thus, in order to identify Tourist Local Systems, we apply to the LLMAs a concentration index for each macro definition of ATECO 2002: $LQ_{is} = \frac{E_{is}}{E_s} \Big/ \frac{E_i}{E}$ (13), , where E_{is} is the number of employees in local units in the local system s specialised in the sector i; E_s is the number of employees in local units in the local system s; E_i is the number of employees in Italy specialised in the industry i; and E is the total employment in Italy. A LQ above 1 indicates that a LLMA*s* have a specialisation (concentration) in the industry

[12] With such methodology, the national territory was subdivided through criteria inspired by the district theory. ISTAT (Sforzi, 1997a) identified 784 LLMAs in the Italian territory. They were the result from the aggregation of the daily commuting flows of the 8,100 Italian municipalities of the 1991 Census. Although the LLMAs have been defined ten years ago, we think that the undeniable evolution of a local system is pretty durable and we can use the LLMAs of 1991 census in order to underline a concentration of TLS on 2001 census. Moreover, we think social life and socio-economic relations are pretty steady in the time. Finally, The new LLMAs based on the 2001 Census will be identified at the end of 2004. Territorial boundaries refer therefore to the municipalities of 1991.

[13] This methodology has also been recently extended to Spain (Boix and Galletto 2005).

[14] A narrow definition of tourism has been applied, for instance, in Lazzeretti and Capone (2004).

[15] OECD (1999) mostly refers to these sectors in analyzing the territorial employment in European Community, as it is directly connected to tourism. Obviously, the growth of the employment in HoReCa industries can not be only attributed to tourism.

i above the national average. Regarding the representation of the LQ we adopt a fix scheme with defined classes, in order to easier interpret the results: [0-1], [1-1.25], [1.25-2] and [> 2]. Following Sforzi (1997b) we analyse the 784 LLMAs selecting firstly those local systems specialised in: (1) industry (2) services, then specialised in (3) services to enterprises, (4) services to consumers and finally in (5) the tourist *filiere* as defined. Data have been collected from Italian *Industry and Trade* Census 2001 for every municipality.

Figure 2a shows those LLMAs with a LQ for the tourist *filiere* above the national average, subdivided by specialisation in other activities for the year 2001[16]. Figure 2b presents TLSs with a LQ for the tourist *filiere* above 1. It indicates around 300 TLS with a LQ until 8. The highest values are concentrated in the North (Trentino and Alto Adige) and centre of Italy (Liguria, Toscana e Lazio). The map shows also *Arts Cities* like Florence, Rome and Venice[17], localities specialised in the *three S* (Sun, Sand and Sea), sky destination (Alps, in particular Trentino Alto Adige), and lakes localities (as around Garda Lake).

In order to reveal the different typologies of TLS, we apply a *K-Means Cluster Analysis* (Dillon and Goldstein 1984). This procedure attempts to identify several groups based on selected characteristics, using an algorithm that can handle large number of cases[18]. Each row of the *filiere* represent one of the 269 LLMAs previously identified (individuals), while each column represent the percentage of employment in the municipality of that activity of the tourism *filiere* on the total *filiere* employment (variables). Moreover we add as first column the value of the LQ-*filiere* (figure 2b). The K-means Cluster procedure forms 5 homogenous cluster of Tourist Local System[19]. The

[16] 1) No specialised in tourist activities, 2) specialised in tourism and industry, 3) specialised in tourist, service and commerce and 4) diversified as in Sforzi (1997b).

[17] The LQ recognizes a strong specialization only in one activity. In the big cities, it is used to have a diversification of industries so that the TTI weight less than in an "tourist place".

[18] The "k-means" is a cluster methodology that carries out a single partition of the individuals (municipalities) in *k* groups. It uses an algorithm that allows forming relatively homogeneous conglomerates from the characteristics of the individuals. The "k-means" is based on the distance to the nearest centroid. It assigns every individual into a group with regard to minimize its distance to the centre of the conglomerate (Dillon and Goldstein 1984:186-187).

[19] The number of clusters should be determined a priori, although a clear approach doesn't exist to determine it. The number of departure groups, as well as the industry division (number of variables) may influence the results. We carry out an analysis of sensibility changing the number of groups and results tend to be were robust. We also tried a hierarchical cluster procedure without predetermine the number of

Cluster nº2, composed by 157 LLMAs is the biggest one. It is pretty diversified and it is the most specialised in train, air transport and other infrastructures. It has the lowest LQ but it has a strong diversification along the *filiere*. It is composed by *cities of arts* like Rome, Florence and Venice, Siena and Pisa but also cities like Orvieto, Spoleto and Assisi. The Cluster nº 4 is the second largest cluster and it is more specialised in the tourist *filiere* than the previous group. It has a poor level of infrastructures and it is specialised in only some parts of the *filiere* like accommodation facilities and recreational activities. In this group we find medium-small cities where tourism is one of the main activities (Rimini, Orbetello, Cattolica, Riva del Garda) and small rural LLMAs (Gaiole in Chianti, Manciano, San Quirico D'orcia). The other three clusters account together to 100 LLMAs (cluster nº5 has only four LLMAs). This group is the most specialised TLSs with highest LQ. These TLSs can be considered as the more probable tourist district, even though we do not investigate the social environment. These TLSs can be divided in two sub-groups: the first one is characterised by the initial part of the *filiere*: transport and accommodation facilities; the second one is based on the second part of the *filiere*: food and recreational facilities.

4. Econometric analysis of the sources of competitiveness in the TLS

4.1. Data and variables

As firms data or municipal added value and capital are not available for the *filiere*, we use the one-input specification, as in the equation nº6: $\Phi = A_{ijt} L_{ijt}^{1-\alpha}$. This model fits a labour demand equation like Glaeser et al. (1992), Henderson et al. (1995) and De Lucio et al. (1996). For the estimation, we use data from the Italian Censuses of 1991 and 2001 (ISTAT): employment by industry, number of firms by industry and variables regarding the population.

From the epigraphs 2 and 3, a strong relationship between tourism labour growth and localisation advantages is expected. Localisation advantages can be focused from a natural or a systemic approach. We approach the natural resources using dummies. For the systemic advantages, we consider important the existence of entrepreneurships,

groups. The dendrogram also shows that 5 cluster can be appropriate for the group analysed. Detailed results are available under request.

social atmosphere, skilled labour force, specialisation, specialised suppliers and knowledge spillovers. In order to approach these features, we use the inverse of the firm dimension (small firms, to capture the existence of entrepreneurships and knowledge spillovers among them), the initial amount of labour and the location coefficient (it captures the existence of knowledge spillovers and the skilled labour), and the inverse of a Hischmann-Herfindahl index inside the *filiere* (specialised suppliers).

The existence of medium and big cities as the *Arts Cities*, suggest that urbanisation economies can play an important role for some types of tourism. We include the total population of the municipality in order to approach the Hoover's dimension effect; and the inverse of a Hischmann-Herfindahl index for all the industries in order to approach the Chinitz and Jacobs' diversity effects. We have no enough data for capturing the effect of infrastructures, and it is assumed as included in the population. We also test the existence of input-output effects outside the *filiere*, using the initial percentage of the aggregated sectors on the total employment. An additional variable (growth of the employment in the other sectors) is included in the model in order to capture common omitted elements that are reflected in the growth of the other sectors.

We test the existence of spatial spillovers or spatial autocorrelation using three types of spatial models: the spatial lag with exogenous variables (cross regressive model), the spatial lag model and the spatial error model. Although we performed an important part of the analysis on the LLMAS, we will use the municipality as unit of analysis in order to test inter-municipality spillovers inside the LLMAS. We use other municipalities in the LLMAS to construct the matrix of spatial contacts. This matrix was row normalised in order to weight the relative influence of neighbourhoods. Finally, we use a spatial regimes specification in order to isolate the performance of the econometric model in the different types of tourist patterns. All explanatory variables (except the *Growth of the other sectors*) are expressed in the initial year (1991) in order to reinforce causality.

4.2. Non spatial models

We start the analysis estimating three separate regressions for localisation, urbanisation and input-output effects. Localisation effects explain over 50% of the variance while urbanisation and input-output effects explain around 10% (table 3). Then, a overparameterized model is estimated, including localisation, urbanisation, and input-output variables. It also includes dummies for the natural endownments (different patterns of tourism). We exclude the LQF, Education, Agriculture, Building, Retail, Service and the dummy variables because they are not statistically significant and produce strong collinearity. Table 3 shows the results of the parsimonious estimation. The Koenker-Bassett test suggests heteroskedasticity. It is related to the different patterns of tourism obtained from the cluster analysis. We present the results of the OLS White Robust estimation (generic heteroskedsticity) and a FGLS estimation using the five clusters in order to model the variance. Results are very similar and suggest little effect of heteroskedasticity on tests. Since in the theoretical model the dependent and explanatory variables are expressed in logarithms, we can interpret the results as direct elasticities.

Regarding localisation variables, the largest coefficient is in the Filiere variable (inverse of the Hischmann-Herfindahl index inside the tourist industry) that measures the local presence of all the parts of the tourist *filiere*. It shows a coefficient β=0.90. In fact, this variable can explain near the 50% of the variance. The Small firm variable is positive and statistically significant with a coefficient β=0.08. It indicates that the existence of a small firm dimension is related to a better performance in the employment growth. The initial level of employment is negative with β=-0.11. It is usual in this kind of models and indicates that places with a large amount of employment in the industry tend to growth below the mean[20].

Regarding urbanisation variables, population is statistically significant with a coefficient β=0.094, and diversity (inverse of the HHI using all two digits industries) is negative with β=-0.22. It can be interpreted as a positive relationship with the urban dimension (e.g. infrastructures and other amenities) but it growths slower in cities with a wide diversified economic structure. The existence of a relative initial specialisation in industry is positive and statistically significant, but the coefficient is very small (β=0,02).

[20] This coefficient is related to LQ, but shows better performance on the model. We calculated the LQ using firms and not sectors in order to avoid the effect of large firms. We used other specialization coefficients (e.g. Fingleton et al. 2004) but they were not statistically significant.

4.3. Spatial models

The spatial tests (LM Lag and LM error) suggest the existence of some kind of spatial autocorrelation. Since the coefficient of the error test is larger than the lag one, the error model may perform better than the lag model[21]. However, the spatial error test could be related to other kind of missespecification (McMillen 2003). Thus, we start estimating a model that includes the spatial lags of the exogenous variables (cross regressive spatial model). Since all the variables are in logarithms and the matrix of spatial contacts is row normalised, the spatial coefficients can be interpreted like direct elasticities. However, any exogenous spatial coefficient is statistically significant (table 4, column 4) and the spatial autocorrelation continues to remain in the LM tests[22]. The spatial lag and spatial error models were estimated (ML estimation with groupwise heteroskedasticity) and the spatial parameter were statistically significant with ρ=0.08 and λ=0.10[23]. The comparison of the Akaike and Schwartz criteria confirms that the spatial error model performs better than non spatial and spatial models. However, effects on non spatial coefficients are very small. It also suggests two hypotheses: the transmission of stochastic shocks through the space or that the Local Labour Market Areas are the correct unit of analysis and not the municipality. The latter one would agree whit the hypothesis of Sforzi (1997a) and Menghinello (2002), and suggest the use of the LLMAs as unit of analysis.

4.4. Spatial regimes

Finally, we test the performance of the model on the diverse typologies of tourist systems using a spatial regimes model. This model was described in Anselin (1988 and 1992). This process uses an indicator variable in order to separate the slopes of the different intercepts and coefficients:

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[21] We also inspected the other tests provided by the SpaceStat 1.91 (Moran's I, KR, Robus LM error and Lag, and SARMA).

[22] Since this model shows collinerarity (condition number = 71.64) we estimated the model including only a variable at the same time. However, no spatial exogenous lag was statistically significant.

[23] We confirm the results estimating the models using IV (lag, error) and GMM (error).

$$\begin{bmatrix} y_1 \\ y_2 \\ y_3 \\ y_4 \\ y_5 \end{bmatrix} = \begin{bmatrix} X_1 & 0 & 0 & 0 & 0 \\ 0 & X_2 & 0 & 0 & 0 \\ 0 & 0 & X_3 & 0 & 0 \\ 0 & 0 & 0 & X_4 & 0 \\ 0 & 0 & 0 & 0 & X_5 \end{bmatrix} \begin{bmatrix} \beta_1 \\ \beta_2 \\ \beta_3 \\ \beta_4 \\ \beta_5 \end{bmatrix} + \begin{bmatrix} u_1 \\ u_2 \\ u_3 \\ u_4 \\ u_5 \end{bmatrix} \quad (14)$$

Using this structure we can estimate the OLS and spatial error models in the usual way: $y^* = X^* \beta^* + u^*$ (15). The results (table 5) show an interesting feature: the model has a good performance on the clusters 2 (art cities) and 4 (specialisation in a part of the *filiere*). However, any coefficient in the other three clusters was statistically significant (tourist districts). The Chow-Wald test (χ^2) confirms that there is structural instability in the model as whole, mainly associated to the *filiere* suppliers variable[24].

5. Conclusions

The objective of this paper was twofold: the first was to identify tourist local systems in Italy, the second was to advance in the study of their sources of competitiveness. Regarding this last topic, the main hypothesis was to differentiate between two basic sources of increasing returns in the production process: internal and external economies.

We developed a methodology in two stages: firstly, we constructed a tourist *filiere* and we apply LQs for the identification of local systems through GIS tools, secondly, we tested a spatial econometrics model regarding different kinds of Italian Tourist Local Systems as individuated in the previous step.

The results of the first analysis point out that this methodology is applicable to travel and tourism industry. The Tourist Local Systems recorded are heterogeneous and strongly specialised in tourism industry as their core industry. They represent tourist destinations as “sea, sand and sun”, “snow and sky” and “lakes” and confirm the Italian tourist destinations landscape. Thus, a taxonomy of TLSs is presented and the different groups of TLSs are tested with spatial econometric models. The spatial tests (LM Lag and LM error) suggest the existence of some kind of spatial autocorrelation. The spatial

[24] Since strong collinearity appears in the regimes model, results should be taken carefully.

parameters are statistically significant with ρ=0.8 and λ=0.10 and therefore presume an network inside the LLMAs. In fact, Local Labour Market Areas seems to be the correct unit of analysis as in the hypothesis of Sforzi (1997a) and Menghinello (2002) and not the municipality.

The spatial regimens model has a good performance on "Art cities" and in the "specialised TLS" (in only a part of the *filiere*). On the contrary, coefficients of the presumed "tourist district" are not statistically significant. As the estimated model comes from studies mainly on urban economics it is fully satisfactory for large and medium cities but it does not explain performances and growth for tourist districts and small cities.

In summary, higher growth rates are associated to a local presence of all the phases of the tourist *filiere* in the local network. In fact, this variable explains near 50% of the variance and confirms that the proposed *filiere* appears to be suitable. Moreover, the existence of a small firm dimension is related to a better performance in the employment growth. Implications for policy design arise from these results as suggest the more appropriate ambits and factors to foster each phase of tourist and travel industry, as well as where and why to locate a particular firm in function of its phase belonging.

Regarding further developments of the research, the next step should be to perform the analysis for LLMAs and for networks of LLMAs as LLMA results as the correct unit of analysis. Secondly, the marshallian concept of external economies has to be deepening, in order to construct a model that captures the effects of marshallian localisation economies formed by a skilled labour pool, specialised suppliers and knowledge spillovers. Last issue is related to the "industrial atmosphere" in an industrial district, as it is very difficult to capture with quantitative analysis. Some authors (Becattini et al. 2003; Lazzeretti 2003) explain it through qualitative analysis. A further step could be to perform qualitative analysis on particular cases in order to focus and capture specific district's sources of competitive advantages.

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Table 1. *Broad tourism filiere*

Agriculture
- 01.13 Growing of fruit, nuts, beverage and apiculture;

Artistic artisans
- 26.1 Manufacture of glass and glass products (Artisans);
- 26.2 Manufacture of ceramic household and ornamental articles (Artisans);

Hotels and restaurants (HoReCa)
- 55.1 Hotels;
- 55.2 Camping sites and other provision of short-stay accommodation;
- 55.3 Restaurants;
- 55.4 Bars;

Real state, renting
- 70.2 Letting of own property;
  71.1 Renting of automobiles;

Recreational, cultural and sporting activities
- 92.3 Other entertainment activities;
- 92.5 Library, archives, museums and other cultural activities;
- 92.6 Sporting activities;
- 92.7 Other recreational activities;

Transport
- 60.1 Transport via railways;
- 60.2 Other land transport;
- 61.1 Sea and coastal water transport;
- 61.2 Inland water transport;
- 62.1 Scheduled air transport;

Travel agencies
- 63.3 Activities of travel agencies and tour; operators; tourist assistance activities n.e.c.;

Source: Authors' own work based on Ateco 2002 (Nace 1.1);

Table 2. *Explanatory variables*

Small firm	$1 \Big/ \left(E_i^{1991} \big/ F_i^{1991} \right)$	Agriculture	$E_{i,AGR}^{1991} \Big/ E^{1991}$
Employment	E_i^{1991}	Manufactures	$E_{i,MAN}^{1991} \Big/ E^{1991}$
Filiere	$1 \Big/ \sum_j \left[\frac{E_{is}^{1991}}{E_s^{1991}} \right]^2$	Construction	$E_{i,CONS}^{1991} \Big/ E^{1991}$
LQF	$\frac{F_{ij}^{1991} \big/ F_i^{1991}}{F_j^{1991} \big/ F}$	Retail	$E_{i,RET}^{1991} \Big/ E^{1991}$
Population	$Population_i^{1991}$	Services	$E_{i,SERV}^{1991} \Big/ E^{1991}$
Diversity	$1 \Big/ \sum_j \left[\frac{E_{ij}^{1991}}{E_j^{1991}} \right]^2$	Growth of the other sectors	$\sum_{j' \neq s} E_{ij'}^{2001} \Big/ \sum_{j' \neq s} E_{ij'}^{1991}$

Source: our elaboration; E = Employment; F = Firms;

Table 3. *Separate regressions for localisation, urbanisation and input-output variables*

LOCALISATION		URBANISATION		INPUT-OUTPUT	
Constant	-0.6288***	Constant	-2.4093***	Constant	1.0010***
	(0.0000)		(0.0000)		(0.0000)
	[0.0000]		[0.0000]		[0.0000]
Ln Small firm	0.0783***	Ln Population	0.2215***	Agriculture	0.0125
	(0.0004)		(0.0000)		(0.1092)
	[0.0173]		[0.0000]		[0.1412]
Employment	-0.0672***	Ln Diversity	0.2986***	Manufactures	0.1619***
	(0.0000)		(0.0000)		(0.0000)
	[0.0000]		[0.0051]		[0.0000]
LQF	-0.0287**	Ln Education	-0.0522*	Building	0.1079***
	(0.0082)		(0.0799)		(0.0000)
	[0.0520]		[0.1104]		[0.0374]
Filiere	0.8610***			Retail	0.1667***
	(0.0000)				(0.0000)
	[0.0000]				[0.0468]
				Services	0.0982***
					(0.0000)
					[0.1049]
R2	0.5302	R2	0.1037	R2	0.1131
R2-adj	0.5294	R2-adj	0.1026	R2-adj	0.1112
AIC	5010.17	AIC	6526.32	AIC	6505.69
SC	5038.98	SC	6549.37	SC	6540.26
SIG-SQ	0.4926	SIG-SQ	0.9395	SIG-SQ	0.9305
SIG-SQ(ML)	0.4916	SIG-SQ(ML)	0.9379	SIG-SQ(ML)	0.9281
CN	8.4291	CN	41.1571	CN	10.5413
Jarque-Bera	192875.52***	Jarque-Bera	267879.16***	Jarque-Bera	248698.85***
Koenker-Bassett	32.7940***	Koenker-Bassett	86.5923***	Koenker-Bassett	184.5587***
LM error	14.2627***	LM error	16.2420***	LM error	19.5149***
LM lag	10.1982***	LM lag	11.9422***	LM lag	18.7740***
OBS	2350	OBS	2350	OBS	2350

Values in parenthesis are p-values. * p<0,1; ** p<0,05; *** p<0,01.

Table 4. *Non-spatial model, lag model and error model*

Dependent variable: Ln ($Labour_{2001}$ / $Labour_{1991}$)

	OLS	OLS White	FGLS GHET	FGLS GHET	ML LAG GHET	ML ERROR GHET
Constant	-0.8463***	-0.8463***	-0.8475***	-0.6817***	-0.8104***	-0.8548***
	(0.0000)	(0.0000)	(0.0000)	(0.0001)	(0.0000)	(0.0000)
Ln Small $firm_{1991}$	0.0815***	0.0815**	0.0760***	0.0790***	0.0730***	0.0768***
	(0.0001)	(0.0055)	(0.0004)	(0.0003)	(0.0007)	(0.0004)
Ln $Employment_{1991}$	-0.1164***	-0.1164***	-0.1113***	-0.1121***	-0.1114***	-0.1094***
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Ln *Filiere*$_{1991}$	0.9078***	0.9078***	0.8952***	0.8962***	0.8915***	0.8921***
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Ln $Population_{1991}$	0.0944***	0.0944***	0.0934***	0.0963***	0.0890***	0.0933***
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Ln $Diversity_{1991}$	-0.2212***	-0.2212***	-0.2279***	-0.2200***	-0.2252***	-0.2262***
	(0.0000)	(0.0059)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Ln $Manufactures_{1991}$	0.0304**	0.0304*	0.0241***	0.0201*	0.0234**	0.0225**
	(0.0037)	(0.0697)	(0.0167)	(0.0564)	(0.0199)	(0.0266)
Ln Growth other sectors	0.1645***	0.1645***	0.1501***	0.1495***	0.1483***	0.1484***
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
W * Ln Small $firm_{1991}$				-0.0393		
				(0.4674)		
W * Ln $Labour_{1991}$				-0.0187		
				(0.5410)		
W * Ln *Filiere*$_{1991}$				0.0465		
				(0.4848)		
W * Ln $Population_{1991}$				-0.0097		
				(0.7578)		
W * Ln $Diversity_{1991}$				-0.0484		
				(0.5455)		
W * Ln $Manufactures_{1991}$				0.0309		
				(0.1861)		
W * Ln Growth other sectors				0.0405		
				(0.5966)		
ρ					0.0815	
					(0.0045)	
λ						0.1098
						(0.0017)
R2	0.5471	0.5471	0.5312	0.5325	0.5307	0.5293
R2-adj	0.5457	0.5457				
SQ Corr			0.5469	0.5476	0.5486	0.5469
AIC	4930.38	4930.38			4881.65	4873.3
SC	4976.48	4976.48			4933.51	4919.4
CN	29.27			71.64		
Jarque-Bera	204183***					
Koenker-Bassett	34.52***					
WALD HET			76.80***	73.7603***		
LR HET					44.5435***	48.0926***
LM error	8.9121***		8.7649***	8.7923***		
LM lag	5.9290***		6.7948***	8.4803***		
OBS	2350	2350	2350	2350	2350	2350

Values in parenthesis are p-values. * p<0,1; ** p<0,05; *** p<0,01.

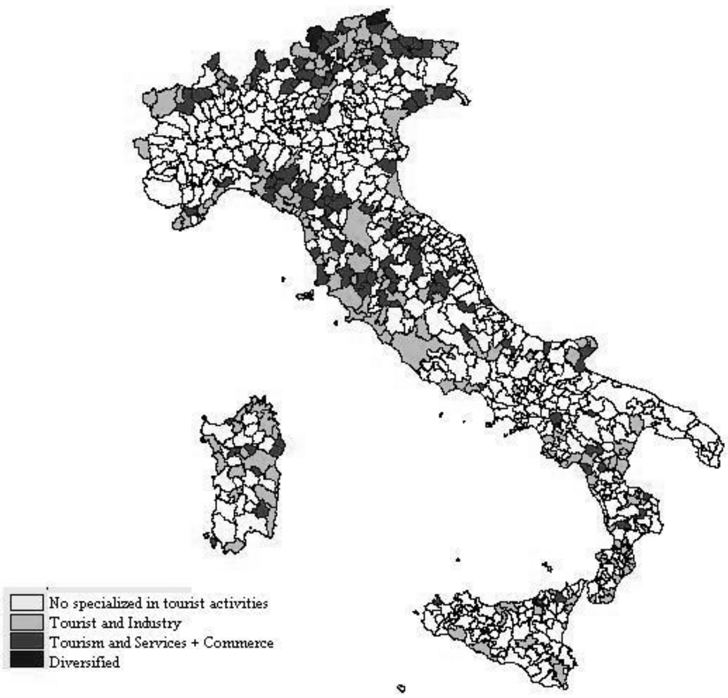
Table 5. *Structural regimes model*

	OLS					ML ERROR				
	C1	C2	C3	C4	C5	C1	C2	C3	C4	C5
Constant	-0.7383	-0.8762***	-0.3603	-1.1228**	-3.3009	-0.6785	-0.8747***	-0.4695	-1.2254**	-3.3009
	(0.1307)	(0.0000)	(0.6652)	(0.0036)	(0.5073)	(0.1753)	(0.0000)	(0.5865)	(0.0018)	(0.5012)
Ln Small firm$_{1991}$	-0.1202	0.1094***	-0.0462	-0.0137	1.0647	-0.1115	0.1102***	-0.0592	-0.0159	1.0647
	(0.4069)	(0.0000)	(0.7590)	(0.8030)	(0.6401)	(0.4427)	(0.0000)	(0.6985)	(0.7708)	(0.6347)
Ln Employment$_{1991}$	-0.1075	-0.1262***	-0.1190	-0.1840***	1.2933	-0.0947	-0.1225***	-0.1384	-0.1955***	1.2933
	(0.1022)	(0.0000)	(0.1482)	(0.0001)	(0.4734)	(0.1601)	(0.0000)	(0.1039)	(0.0000)	(0.4730)
Ln *Filiere*$_{1991}$	0.0653	0.9237***	-0.0334	0.9701***	-0.2625	0.0514	0.9223***	-0.0503	0.9718***	-0.2625
	(0.7207)	(0.0000)	(0.9099)	(0.0000)	(0.9071)	(0.7750)	(0.0000)	(0.8653)	(0.0000)	(0.8971)
Ln Population$_{1991}$	0.1261*	0.0998***	0.1501	0.1605**	-0.5484	0.1187	0.0967***	0.1741	0.1720**	-0.5484
	(0.0973)	(0.0000)	(0.2151)	(0.0049)	(0.6722)	(0.1357)	(0.0000)	(0.1658)	(0.0031)	(0.6900)
Ln Diversity$_{1991}$	0.0501	-0.2052***	-0.1569	-0.2091	1.9407	0.0242	-0.1980***	-0.1503	-0.1801	1.9407
	(0.7977)	(0.0000)	(0.6374)	(0.1690)	(0.5882)	(0.9028)	(0.0000)	(0.6507)	(0.2377)	(0.5965)
Ln Manufactures$_{1991}$	0.0000	0.0338***	-0.0003	0.0933***	0.2524	0.0009	0.0334**	-0.0068	0.0852*	0.2524
	(0.9992)	(0.0051)	(0.9956)	(0.0052)	(0.6213)	(0.9788)	(0.0054)	(0.9079)	(0.0121)	(0.6428)
Ln Growth other sectors	0.0017	0.1963***	-0.1276	0.1630**	0.9506	0.0096	0.1927***	-0.1401	0.1584*	0.9506
	(0.9859)	(0.0000)	(0.5115)	(0.0422)	(0.8196)	(0.9194)	(0.0000)	(0.4696)	(0.0463)	(0.8201)
λ						0.1124**				
						(0.0013)				
R2			0.5616					0.5613		
R2-adj			0.5542							
SQ Corr								0.5614		
AIC			4917.99					4909.60		
SC			5148.48					5140.08		
SIG-SQ			0.466737					0.4563		
SIG-SQ(ML)			0.458793							
CN			171.87							
Jarque-Bera			225560	***						
Chow - Wald			2.3851	***				77.0352***		
Koenker-Bassett			2.6279							
Breusch-Pagan								65.3377***		
Spatial BP								65.3528***		
LM ERROR			7.7258	***						
LM LAG			5.2390	***						
OBS	193	1708	86	355	8	193	1708	86	355	8

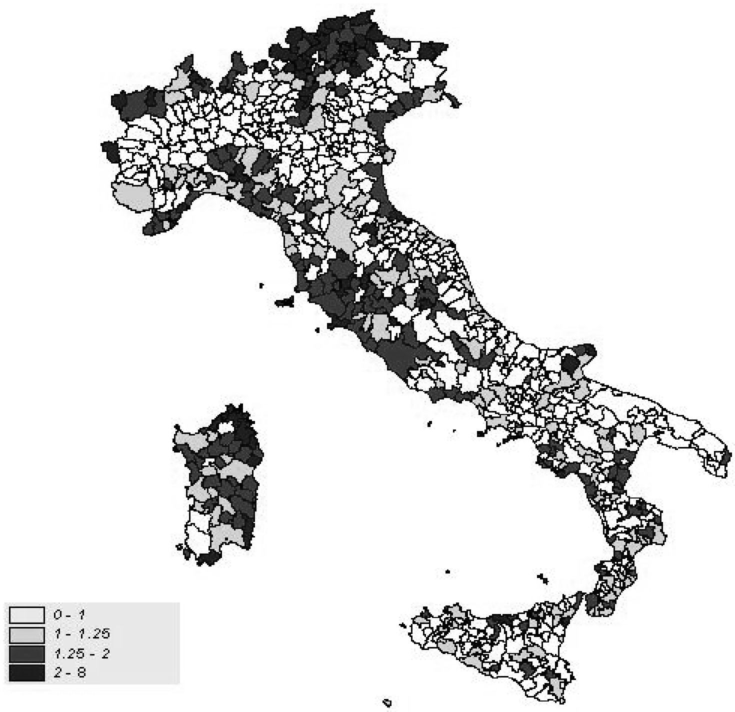
Values in parenthesis are p-values. * p<0,1; ** p<0,05; *** p<0,01.

Figure 1. Tourist Local Systems in Italy

a) TLSs and specialisation activity 2001



b) LQ Tourism filiere 2001



Source: Our elaboration from Census (ISTAT 2001).