

'NORTH OF THE SOUTH' OR 'SOUTH OF THE NORTH'? REVISITING THE SPATIALLY-COMPLEX ECONOMIC DIVIDE IN ITALY

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Abstract: The present study evaluates the economic dynamics of more than 600 local districts in two contrasting periods (mid-1990s and mid-2000s) of the recent development path of Italy in the light of territorial disparities between northern and southern regions. In order to produce a multidimensional concept of 'economic development' 16 variables (including share of agriculture and industry on total product, labour productivity by sector, per-capita and per-worker value added) have been considered together by using exploratory multidimensional statistics. This approach has been preferred to more traditional procedures centred on single-variable analyses (e.g. GDP level and its changes over time) or convergence analysis since it allowed us to debate on the increasingly complex geography of the economic development observed in Italy and the 'newly emerging' socioeconomic disparities among regions. Results indicate that the traditional north-south gap has not been significantly reduced along the last ten years. Coastal-inland and urban-rural gradients revealed as crucial especially in southern Italy, indicating the late transition from agriculture and state-driven industry towards services producing low value added. The persistence of the north-south divide allowed us to identify 'changing' and 'structurally stable' variables as a possible target for integrated developmental policies.

Key Words: *economic development, local district, exploratory data analysis, North-South divide, geographical gradient, Italy.*

Introduction

Formation and persistence of territorial disparities among countries or region is one of the most striking issues for economic, social, and geographical analysis. Impressive changes in the economic structure of countries have occurred all over the world after World War II determining an amplification of the disparities observed among regions within the same country. The shift from modernity to late modernity occurred over the recent years coincided with the shift from industry-oriented to service-oriented economies. The recent crisis is shaping the spatial distribution of wealth and poverty by re-drawing economic geographies in both developed and developing regions and discriminating among rich (and economically-resilient) and poor (and economically-weak) societies.

In some way, this issue can be theoretically reconnected with the convergence problem (i.e. a country growing faster than others). Economic theory has long been aware of this problem and various explanations have been provided in the past (Barro and Sala-i-Martin, 2004 for a review). A certain school of thought reached an optimistic view of reality by predicting that a set of countries (or regions) will tend to assume a common level of output per capita in the presence of constant returns to scale and decreasing productivity of capital. However, empirical studies show contrasting, less optimistic, results. As a matter of fact, it was clearly

demonstrated how processes of economic convergence produced only a partial reduction of territorial disparities even in developed regions (Arbia and Paelinck 2003).

In Europe, regional convergence studies have experienced an acceleration of interest in the last decades due to the issues raised by the unification process. Since large differentials in per capita GDP across regions are regarded as an impediment to economic and monetary union, the narrowing of regional disparities is indeed regarded as a fundamental objective for the European Union policy. One example is southern Europe, where important social and economic disparities exist among neighbouring regions. Although several Mediterranean countries experienced an impressive development in the last decades, regional disparities exist especially where rural areas yet show a level of per capita GDP considerably lower than the European average. As an example, marginal rural areas in Portugal, Spain, Italy, and Greece exhibit critical conditions due to the limited chances to a rapid growth, claiming for renewed policy interventions (Brunori and Rossi 2007). Population growth, agricultural intensification and industrial development have been regarded as the key factors consolidating the gap between affluent and dynamic regions and economically-disadvantaged areas (Giusti and Grassini 2007).

In Italy, however, the reduction in the North-South divide was amazing, due to the drastic growth of southern Italy economy, fostered by the public policy programmes launched by southern Italy Development Fund, a special agency for the industrialization of the southern region (see Viesti et al. 2011 for an historical excursus). Unfortunately, the Fund did not succeed in creating the conditions for a self-sustained growth of the regional economy and when the Fund's extraordinary intervention finished, the process of convergence ended, too (Terrasi 1999).

The same can be said for the most recent years where different, sometimes mirroring phenomena like exurban development around the main cities, land abandonment in marginal areas, and tourism concentration along the coastal rim have been observed. While the geography of Italy was therefore changed as far as income level and population density is concerned, this process did not significantly altered the shape and amplitude of territorial disparities that characterized the country in the past following north-south, coast-inland, and urban-rural gradients.

The present study contributes to the analysis of persisting socioeconomic disparities in Italy with policy implications for other socially-divided and economically-polarized countries in the Mediterranean basin and outside the European community. A geographical approach based on multidimensional analysis and carried out at a detailed spatial scale may shed further light in this problematic issue. As a matter of fact, the choice of scale (as instances, administrative regions, provinces or finer ones, like the local districts used in this study) may play a non-trivial role in defining the real extent of convergence processes (Dunford 2002).

The economic dynamics of the Italian local districts have been explored in two contrasting periods (mid-1990s and mid-2000s) of the recent development path of Italy. The former period was characterized by a moderate increase in gross domestic product, high unemployment rate, moderate to high inflation rate, and financial volatility, while the latter period, after Italian accession to the Euro monetary system, featured a lower increase in gross domestic product coupled with declining unemployment rate, low inflation rate and financial stability.

The novelty of this study is to consider economic development as a multidimensional concept - not exclusively centred on GDP level and changes - that can be described by several variables

dealing with the economic structure and productive specialization of local districts, the characteristics of the local labour markets, and the spatial distribution of value added, among others. This approach provides further insight in the geography of economic development by highlighting the relationship among the variables mostly contributing to the 'newly emerging' regional disparities in Italy.

In order to produce a multidimensional concept of 'economic development', 16 variables (including share of agriculture and industry on the total production, labour productivity by sector, per-capita and per-worker value added) have been considered together in a multivariate framework. 'Latent' indicators of economic development in Italy have been proposed and analyzed in their spatial distribution over time as a potentially useful and original approach to the analysis of territorial disparities (Casadio Tarabusi and Palazzi 2004). In this perspective, Italy represents an intriguing case study as it shows a pronounced north-south divide: northern Italy is a developed region with a dynamic industrial and service-oriented economy, while southern Italy is still a disadvantaged region oriented to traditional tertiary productions (e.g. constructions, commerce, public administration) and medium- or low-income agriculture. Results of this study may thus overcome the restricted number of papers devoted to this problem in developed and internally-divided countries. By providing effective indicators to monitoring the evolving socioeconomic disparities at country scale, the present paper also discusses the role of selected geographical gradients in conditioning the economic development in polarized countries.

Methods

The investigated area

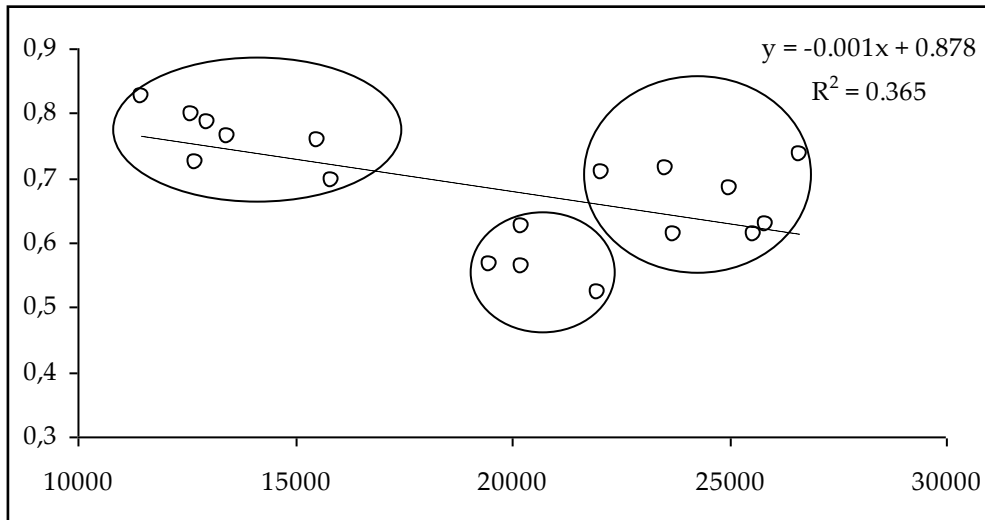
The examined area covers the whole of Italy (301,330 km²). Our observation units are Local Labour Market Area (LLMA) districts, which reflect homogeneous areas from the economic perspective at a detailed geographical scale. A total of 784 and 686 districts were defined by the Italian National Statistical Institute (ISTAT) according to data collected respectively in 1991 and 2001 National Censuses of Population (ISTAT 2006).

Socioeconomic indicators

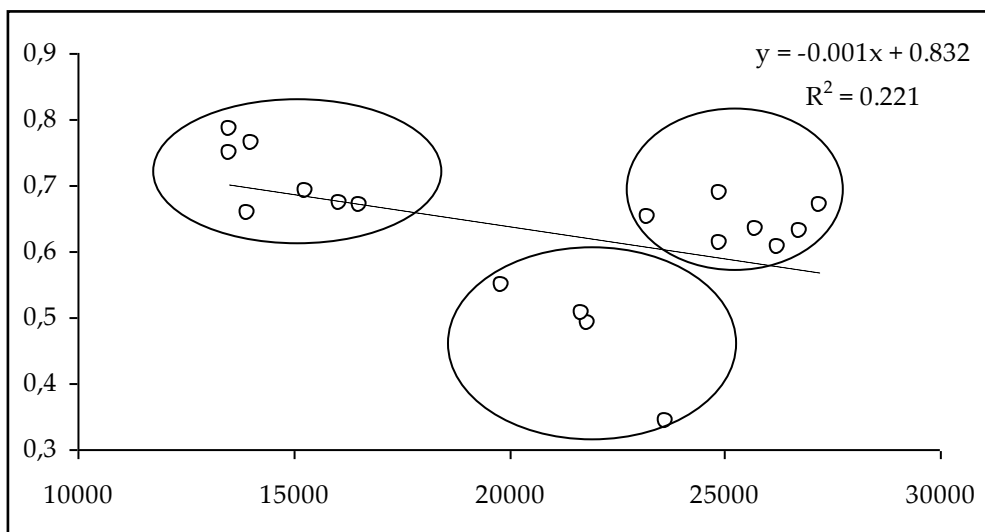
The indicators used in the present study (Table 1) have been made available at the district scale from data provided by ISTAT and referring to 1996 and 2005. The following variables have been calculated: *per-head* and *per-worker* district value added, share of agriculture and industry in total district product, labour productivity by sector (agriculture, industry, and services), manufacture-specialized districts (dummy), industrial clusters (dummy), and un-specialized districts (dummy). Supplementary variables describing district specialization in tourism, average elevation as a *proxy* of accessibility, population density, the prevalent land-use (urban vs rural) and the geographical position of each district (northern and central Italy vs southern Italy) have been also considered (ISTAT 2006).

Statistical analysis

To explore the pair-wise relationship among the selected indicators at the local scale, non-parametric Spearman rank cograduation tests have been developed in both 1996 and 2005 for two geographical divisions separately (northern-central Italy and southern Italy) testing for significance at $p < 0.001$ based on Bonferroni's correction for multiple comparisons. A Factor Analysis (FA) was carried out to assess the evolving regional disparities in Italy and to identify



(a) 1996



(b) 2005

Fig. 1 - The relationship observed between average regional per-head value added (x-axis) and an index of territorial disparities (y-axis) (see 'methods' for details) by year (from left to right, circles highlight the position of southern, central and northern Italy regions).

the geo-economic gradients underlying local development. FA was applied to a matrix composed of nine standardized variables (all variables marked with one star in Table 1) made available on 784 and 686 districts, respectively in 1996 and 2005. As the analysis was based on the correlation matrix, the number of significant axes (m) was chosen by retaining factors

Table 1

The indicators calculated in this study

Acronym	Variable	Source
INC	Per-head district value added*	National and Territorial Accounting Statistics (ISTAT)
VPR	Labour productivity in the economy*	
ASH	Share of agriculture in total product*	
APR	Labour productivity in agriculture*	
ISH	Share of industry in total product*	
IPR	Labour productivity of industry*	
SPR	Labour productivity of services*	
MAN	Manufacture-specialized district** ,***	National Accounts and Population Census (ISTAT)
CLU	District belonging to an industrial cluster** ,***	
DES	Unspecialized district** ,***	
SSH	Share of services in total product**	
TUR	Tourism-specialized district** ,***	
URB	Urban district** ,***	
PDE	Population density (inhabitants/km ²)**	Population-Households Census (ISTAT)
GEO	Geographic position (0: northern and central Italy; 1: southern Italy)** ,***	
ELE	Elevation (0: lowland and upland area; 1: mountainous area)**	

* indicates active variables in Factor Analysis;

** indicates supplementary variables used in non-parametric correlation analysis - see text for details;

*** indicates a dummy variable.

with eigenvalue > 1 (Salvati and Zitti 2009). The Keiser-Meyer-Olkin (KMO) measure of sampling adequacy, which tests whether the partial correlations among variables are small, and Bartlett's test of sphericity, which tests whether the correlation matrix is an identity matrix, have been used in order to assess the quality of FA outputs. These tests indicate if the factor model is appropriate to analyse the original data. Based on the scores of the two most important factors, local districts were segregated into different groups (Salvati and Zitti 2009). The coordinates of each district over the x-y factorial plane (Factor 1 vs Factor 2) were correlated by Spearman Rank Cograduation Tests to the supplementary variables (see Table 1) measured at the district scale.

Finally, disparities in the spatial distribution of district value added in 1996 and 2005 have been evaluated in the 20 Italian administrative regions by computing a territorial disparity ratio as the ratio of *per-head* value added range (max – min) to the average *per-head* value added at the district scale. The relationship between *per-head* regional value added and the index of territorial disparities in district value added was assessed using Pearson correlation coefficients in 1996 and 2005 testing for significance at $p < 0.001$.

Results

Non-parametric correlation statistics (Tables 2-3) and the PCA results (Tables 4-5) illustrated the recent changes observed in the Italian economy at the district scale. In 1996 the different performances of the agriculture, industry, and service sectors reflected primarily the economic

Table 2

Spearman rank cograduation coefficient matrix among the selected indicators observed in 1996 by geographical division in Italy

Variable	ASH	ISH	APR	IPR	SPR	VPR	INC
<i>Northern and central Italy</i>							
PDE	-0.45	0.16	0.28	0.14	0.28	0.33	0.39
ASH		-0.04	0.13	-0.27	-0.03	-0.34	-0.44
ISH			0.16	0.25	0.26	0.10	0.10
APR				0.07	0.11	0.30	0.14
IPR					0.19	0.75	0.55
SPR						0.55	0.29
VPR							0.59
<i>Southern Italy</i>							
PDE	-0.51	0.01	-0.01	0.09	-0.02	0.25	0.24
ASH		-0.19	0.12	-0.40	-0.04	-0.57	-0.59
ISH			0.04	0.44	-0.28	0.01	0.13
APR				0.12	0.12	0.44	0.27
IPR					0.10	0.59	0.50
SPR						0.53	0.25
VPR							0.72

(bold indicates significant correlations with $p < 0.001$ [$n = 784$]).

gap between northern and southern Italy. During 1996-2005, a slow transition from manufacture industry to high-value added tertiary productions (including tourism) in northern and central Italy and an even slower transition from agriculture to medium-intensity services in southern Italy emerged from the analysis. In southern districts, where the share of agriculture was higher, the depressing effect on local income deepened, as measured by the Spearman's test. This could be ascribed to the worsening performance of the primary sector in this region compared with the rest of the country, mainly due to scale and learning effects (Esposti 2011).

In both years, however, the FA highlighted the importance of north-south gradient in Italy. Coastal-inland and urban-rural gradients result also important especially in 2005. Factor 1 explained 58% and 50% of the total variance respectively in 1996 and 2005 and represents the specialisation of each district in the industrial sector being also positively correlated to per-head value added. Factor 2, which accounted for 13% of the total variance in both 1996 and 2005 represents the specialisation of each district in the tertiary sector in opposition to the productivity of the industrial sector.

The two factors can be thus considered respectively as a 'wealth' axis and a gradient representing the transition from industry to service at the local scale. The former axis was positively associated to population density and urban districts suggesting that, in both years, affluent districts were mainly located in lowland areas with high concentration of industrial settlements and 'intensive' agriculture (high APR loading). However, the importance of the industrial clusters declined rapidly from 1996 to 2005. The latter axis was correlated to population density and to the share of services in total district product. The growing role of urban systems, coastal-inland gradient and tourism district specialization along this axis likely

Table 3

Spearman rank cograduation coefficient matrix among selected indicators observed in 2005 by geographic division in Italy

Variable	ASH	ISH	APR	IPR	SPR	VPR	PIL
<i>Northern and central Italy</i>							
PDE	-0.51	0.07	0.05	0.27	0.48	0.47	0.45
ASH		0.00	0.29	-0.19	-0.36	-0.37	-0.46
ISH			0.04	0.29	-0.17	-0.09	0.01
APR				0.19	0.01	0.22	0.07
IPR					0.31	0.65	0.49
SPR						0.84	0.66
VPR							0.72
<i>Southern Italy</i>							
PDE	-0.49	-0.05	-0.05	0.16	0.32	0.34	0.28
ASH		-0.07	0.23	-0.39	-0.58	-0.63	-0.72
ISH			0.03	0.32	-0.23	-0.12	0.02
APR				0.01	0.03	0.23	0.01
IPR					0.40	0.56	0.59
SPR						0.92	0.75
VPR							0.82

(bold indicates significant correlations with $p < 0.001$ [$n = 686$])

indicates a 'relinking' process between district income and suburbanisation dynamics especially across the major city-regions (Milan, Turin, Venice).

Using per-head district value added, Table 5 reports an evaluation of the economic disparities in Italy between 1996 and 2005. The polarized economic geography of Italy observed in 1996 changed only partially in 2005, with a weak reduction of the regional disparities observed in southern and insular Italy. North-eastern Italy was the most balanced region in terms of value added spatial distribution in both examined years, likely due to the polycentric territorial organization observed in this area. Moreover, the negative relationship between the index of regional disparities and the average level of value added at the regional scale was significant in both years (Figure 1). Interestingly, in 1996 southern Italian regions are less homogeneous than northern and central Italy and the reverse pattern was observed in 2005.

Discussion

The present study provides insights in the analysis of local development in a divided country by exploring the economic performances of the Italian local districts in two contrasting periods (mid-1990s and mid-2000s) of the recent development path. By considering a high-resolution spatial unit of analysis and key socioeconomic indicators in a diachronic multidimensional approach, the paper introduces a novel approach in the study of local development with emphasis on regional disparities. Despite some criticisms concerning the relevance of the LLMA district as an homogeneous economic region, this spatial unit shows appreciable features that fill the need for data integration, reliability and relevance to regional issues (Salvati et al. 2012).

Table 4

Results of Factor Analysis by year

Variable	1996		2005	
	Axis 1	Axis 2	Axis 1	Axis 2
# districts	784		686	
Explained variance ¹	57.5	13.3 (70.8)	49.6	12.8(62.4)
KMO index ²	0.590		0.604	
Bartlett index ³	3774** ₍₂₁₎		3877** ₍₂₁₎	
Goodness-of-fit χ^2	498** ₍₈₎		433** ₍₈₎	
<i>Factor loadings (active variables)</i>				
INC	0.791	0.272	0.811	0.244
VPR	0.933	0.258	0.927	0.375
ASH	-0.543	-0.178	-0.569	-0.260
APR	0.524	0.384	0.272	0.192
ISH	0.502	-0.121	0.367	-0.359
IPR	0.932	-0.360	0.924	-0.380
SPR	0.580	0.527	0.754	0.563
<i>Correlation with supplementary variables⁴</i>				
MAN	0.086	0.194**	0.192**	0.016
CLU	0.226**	0.250**	0.160*	0.026
DES	-0.373**	-0.144*	-0.543**	-0.085
SSH	-0.190**	-0.189**	0.039	0.537**
TUR	0.026	0.045	-0.008	0.125*
URB	0.211**	-0.072	0.312**	0.107*
PDE	0.190**	0.194**	0.264**	0.270**
GEO	-0.660**	-0.374**	-0.640**	-0.071
ELE	-0.029	-0.086	-0.117*	-0.125*

1) Percent values (cumulated variance in brackets).

2) Keiser-Meyer-Olkin (KMO) measure of sampling adequacy.

3) Bartlett's test of sphericity (degrees of freedom in brackets).

4) Spearman rank cograduation test (significance was indicated by stars: * $0.001 < p < 0.01$; ** $p < 0.001$).

Results highlight the increasingly complex economic geography of Italy reflected in the changing relationships among the considered indicators (Salvati and Zitti 2007). While

processes of convergence have been widely observed between regions located in the three geographical divisions of North-West, North-East and Centre (Terrasi 1999, Proietti 2005, Dunford 2008), contrasting evidence has been provided on actual convergence processes in southern Italy (Arbia and Paelinck 2003, Patacchini 2008, D'Uva and De Siano 2011). Our data indicate that the north-south gap was impressive in 1996 and was not significantly reduced in the most recent years. This claims for a 'turning back' to the economic geography of regional disparities in highly polarized countries. As a matter of fact, a renewed understanding of the north-south problem in Italy (and likely in the whole southern Europe as well) should reveal its wide-range impacts and causes, extending well beyond the industry-service spatial dichotomy which revealed the variables most immediately affected (Esposti 2011). The north-south divide involves processes, related not only to economic but also to organisational, institutional and

Table 5

Disparities in per-head district value added (euros) in Italy by year and geographical division

Geographical division	Max	Min	Average	Range (max-min)	Ratio of Range to Average	% Average/Max
<i>1996</i>						
North-west	28,295	7,411	16,389	20,884	1.27	73.8
North-east	31,039	9,605	17,439	21,434	1.23	69.1
Centre	24,971	6,162	14,012	18,809	1.34	75.3
South	22,872	3,392	8,044	19,480	2.42	85.2
Main islands	20,473	3,668	8,240	16,805	2.04	82.1
<i>2005</i>						
North-west	37,473	10,544	21,106	26,929	1.28	71.9
North-east	36,771	12,576	22,536	24,195	1.07	65.8
Centre	31,179	9,730	18,807	21,449	1.14	68.8
South	22,105	4,758	11,333	17,347	1.53	78.5
Main islands	21,514	5,088	11,416	16,426	1.44	76.4

social factors, which develops at the regional scale. Some reflections can be therefore formulated from the geographical and the economic perspective (Dunford 2002).

Results suggest that the divide between northern and southern Italy, according to the contrasting development paths that have characterised the two regions from the 1970s, consolidated during the investigated period. It was claimed how the economic weakness of southern Italy was depending on to the chronicle 'development deficit' which is commonly observed in other Mediterranean areas (King et al. 2001). However, the causes why southern Italy remains one of the most disadvantaged regions in the European Union are extremely complex as they depend on path-dependent socio-economic factors that are difficult to reverse (e.g. low education attainment and, more in general, a poor quality of the human capital, high unemployment rate, a perennial 'brain drain' towards the 'north' and the spread of organized crime).

Industrialisation started in the early -1960s mainly due to public policies impacting few and limited areas, with financial incentives for large plants in the chemical, petrochemical and steel industries, all sectors that have been deeply affected by the following restructuring processes observed in the 1980s (Dunford and Greco 2007). Up to now the share of industry in total production have declined, except for some geographically-isolated areas (e.g. some districts located in Basilicata region which are commonly referred as 'the north of the south') in favour of low - and medium-profitability service activities, including commerce, constructions, and the public sector.

However, together with the north-south axis, this paper underlines the importance of other crucial gradients in the analysis of the spatial distribution of district value added. The FA identified at least two additional axes, the coastal-inland and the urban-rural gradients, as associated to the level of economic development. In this view, the Spearman correlation analysis demonstrated how the (spatial) linkages between economic processes such as agricultural intensification, industrial concentration, and tourism development (rather than the

'economic development' *sensu lato*) were changing over 1996-2005. Although these findings are not conclusive, they suggest novel lines of investigation on regional disparities in the Mediterranean region (Leontidou and Marmaras 2001).

Conclusions

As a conclusion, let us remark the limits and advantages of the approach presented here. First, we preferred to adopt an exploratory rather than a regression approach, as the classical economic studies propose. One of the pitfalls of result's interpretation from the regression analysis is the fact that correlation not necessarily implies causation. In addition, simple statistical models based on linear regressions might miss important, non-linear relationships among variables. These weaknesses can be mitigated with the use of multidimensional techniques and non-parametric correlation, as it was illustrated in this paper. Obviously, it is also crucial to verify causation among the investigated processes, that is not the main task of multidimensional analyses. To achieve this goal, we are convinced that the effective multi-temporal evaluation of economic development may benefit from a holistic approach based on multi-scale quantitative models even coupled with qualitative approaches.

The results of this study thus encourage efforts towards more sophisticated models analysing empirically-based results. At this stage, a greater importance should be attributed to the geographical scale as an informative framework from both the positive and normative perspective (Salvati et al. 2012). As a matter of fact, both process understanding and policy implementation depend on the mutual interactions among the drivers of economic development that work differently at the various relevant scales, including the country, regional, and local ones. Only by rescuing the crucial role of scale and its influence in the economic dynamics at local scale we can offer a really novel contribution to the economically sustainable development of the Mediterranean region and beyond (Zuindeau 2006, 2007, Karlsson 2007).

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Initial submission: 03.02.2013

Revised submission: 22.05.2013

Final acceptance: 31.05.2013

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