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INDUSTRIAL DISTRICTS AND CITIES IN ITALY: RESHAPING RELATIONSHIPS IN THE KNOWLEDGE ECONOMY

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ABSTRACT

The aim of this paper is to investigate the changing relationship between cities and the Industrial Districts during the last four decades and, in particular, within the paradigm of the knowledge economy. In the '70s, the rise of Industrial Districts after the end of the fordist era demonstrated that a different model of development – based, *inter alia*, on flexibility, local milieux, and horizontal disintegration - was not only possible, but extremely competitive. All these features could not be found in the cities, many of which (mainly the most industrial ones) suffered a structural crisis after the end of fordism. Nowadays, in the knowledge economy, cities are again at the centre of the scene, being the spatial objects where technological and market innovation take place and knowledge creating services do concentrate. Starting from this theoretical basis, a geography of the knowledge creating activities in Italy will be drawn, undoubtedly showing urban features and significant interconnections with the geography of Industrial Districts. In this view, the capability and the possibility for Industrial Districts to be interlinked with urban systems seem to be crucial to trigger mechanisms of endogenous development and to face global competitiveness.

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1 Introduction

The relationship between Industrial Districts (from now on ID) and the city seemed to be antithetical at the beginning of the ’70s, when the latter was the main place of industry − the fordist industry −, the expression of rigidity and control in stark contrast to flexibility, typical of the ID. In the ’80s and in the first half of the ’90s, the development of ICTs and the internationalisation of western firms, which was cost-saving oriented, seemed to prefigure the end of proximity (and, consequently, of the city) as a competitive factor, envisioning a coming spatial organisation where agents, goods and information would have been in constant movement within an enlarged space. Actually, it became soon clear that internationalisation was just one of the faces of globalisation and that economic globalisation requires a further paradigm change, because firms’ clusters are no longer able to provide the conditions for facing global competition. If competition was previously based on cost reduction, now it increasingly requires the continual introduction of process and product innovations, which are knowledge-based activities and, consequently, have taken back “places” to the centre of the scene. If routine activities (which are typical of syntactic communication) do not need peculiar localisation, knowledge-based activities (which are typical of dialogical communication) show a peculiar localisation rationale, which seems to prefer the urban context. Cities facilitate technological and market innovation, being the spatial objects where knowledge-creating activities – which represent the interface between creativity and innovation – do concentrate. As in a modern version of Weber’s localisation theory, cities furnish creativity, innovation and knowledge, which represent, at the same time, basic row materials and strategic assets for the productive sector. In this view the capability and the possibility for ID to be interlinked with urban systems seems to be crucial to sustain processes of endogenous development and to face global competitiveness. This is particularly true in Italy, where the terziarisation process which started during the ’80s, stemmed from and depends (for a large part) on manufacturing activities, which are still quite important in the making of the Italian GDP. Synergic relationships between cities and ID, by way of summary, are essential to make firms able to compete in the global arena.

The paper is organised in 3 paragraphs. In paragraph 2 we will analyse the changing relationships between cities and economic paradigms which followed one another for the last 40 years. In paragraph 3, after having introduced an original classification of the Knowledge-creating services and stated the territorial unit of analysis, we will focus on the Italian case, trying to highlight the spatial implications of the advent of the knowledge economy and, in particular, the spatial relationship between cities and ID. Finally, in the last paragraph, we will analyse the geographical cross-section of the knowledge economy in Italy through the metric of Functional Regions (FR), to better understand the functional and spatial division between cities and ID.

2 From Fordism to the knowledge economy in Italy

Until the '60s, the issue of territorial disparities was declined according to the North-South paradigm whereby territorial dualism coincided with the sectorial one. On one side, there was the presence of a central and modern sector (the Fordist industry), with capital-intensive production methods located in Northern Italy and, on the other side, a backward and peripherical sector with labour-intensive small enterprises and agriculture activities located in the *Mezzogiorno* (Del Monte, 1982).

Fordism is a mass production system based on standardized goods, produced with decreasing costs thanks to scale economies. Work is scientifically organised through the rigid subdivision of tasks (manufacturing, planning, management and enterprise ownership) inside vertically integrated structures. According to Perroux the economic development concentrates upon a few growth poles that correspond to industrial agglomerations where driving firms or driving sectors are located (Perroux, 1955). Poles generate agglomerations economies which bring social and demographic polarisation processes, through Keynesian and Leontievian multiplier effects, generating centripetal and centrifugal field strengths to which subjects and productions means are attracted and rejected in a selective way from and to different places (Torricelli, 2007).

During the last big phase of post-war industrialization in the Western countries, poles were localised in priority in the industrialised urban centres, characterized by high growth rates and intense technological, capital, labour and infrastructures concentrations (Friedmann, 1966). In one respect, industrial urban centres concentrate the necessary workforce for productive activity and represent the main final market, involving employees as consumers. Conversely, industrial cities allow for the control of deviance thanks to the rigidity of the productive organization which is reinforced by the rigidity of urban planning and the fact that factory rules not only economic relationships, but also the social ones. In this period, indeed, it is quite common that big companies supply services, like health and school services (Gallino, 2001).

2.1 The age of ID: escape from the city

In the early 1970s, Fordism was thrown into crisis by a series of events, both conjunctural and structural, which challenged two of its founding pillars: certainty and rigidity. The 1973 oil crisis occurred at a time when the mass goods market was saturated, the fixed exchange rate regime discontinued, and the rigidities imposed by Fordism had become a cause factor of friction, both from the productive and the socio-cultural points of view.

One of the territorial outcomes of the crisis of Fordism was the process of dis-urbanisation that took the form of an inversely correlated growth of inhabitants and economic activities in relation to urban dimension (Dematteis, 1997). In this period manufacturing activities -

mostly land-consuming and labour-intensive ones - delocalised from metropolitan to peripheral areas of the North-western regions (Piedmont, Liguria and Lombardy).
The other phenomenon following the demise of Fordism was the exceptional development of SME within neo-marshallian ID. They were characterised by (a) specialisation in traditional sectors and (b) localisation in the NEC regions (from Umbria to Trentino), where a network of small and middle-sized towns lie in the "urban countryside". These small centres, each of which had planned its own industrial area, were also endowed with diversified urban functions, consolidated institutional traits, a variety of private trade activities and dense road networks which facilitated SME settlements (Fuà, Zacchia, 1983).
The ID quickly became a metaphor of successful local economic development. Together with the process of internationalisation of firms, IDs helped economic agents facing the need for cost reduction. Clusterisation and internationalisation do, indeed, represent two different ways through which economic systems can cope with the rise of the production costs due to the oil crisis and the rigidities of the labour market. Through internationalisation, the most routine productive phases have been displaced to developing or emerging countries, where firms draw heavily on the low cost of labour, relaxed control of negative environmental externalities and a favourable fiscal regime. By contrast, with the clustering of SMEs, cost reductions came from marshallian externalities and decreasing transaction costs. IDs were (and are) embedded in a shared all-embracing atmosphere (economic, social, cultural and institutional), based on proximity and the recurrence of face-to-face contacts. These features strengthen relational networks and enhance mutual trust, allowing entrepreneurs to adopt a vertically disintegrated model of production without having to face its costs. Since they can count on reciprocal trust, they do not have to buy all intermediate goods and services on the market which otherwise they would have to in a purely market-driven context, in order to protect themselves against risk and uncertainty (Williamson, 1985). Finally, although firms were not technological innovation-oriented in this first pioneering phase, they could count on recurrent competitive monetary devaluations, which erased the delays accumulated in terms of labour productivity, compared with the other European competitors.
To sum up, from the point of view of territorial outcomes, we argue that while the city is central to the Fordist industry, it is no longer the case with IDs. Fuà and Zacchia (1983) stated that sprawled industrialisation became possible thanks to the lack of large cities: polycentrism and localisation economies coming from the clustering of SMEs seemed to be enough, at least till the '80s, to make the ID model competitive on the international scene.

2.2 The global economy: back to the city

The internationalisation of western firms was accelerated by the developments of ICTs, as well as new transport and logistic technologies. The new opportunities offered by the ICTs triggered a debate on the relevance of proximity and, consequently, the role of territories and

the city in contemporary economies. Some scholars, on the basis that face-to-face contacts might hypothetically become insignificant, stated that territory would implode in a homogeneous space, eroding the importance of proximity and agglomeration economies (Boden and Molotoch 1994; Toffler, 1980; Pascal, 1987). Mitchell (1995) speaks expressly about a progressive shift from the Weberian city to "Bits City", while Castells (1996) speaks of a *space of flows*, a spatial organisation where agents, goods and information are in constant movement within a globalised space.

The reality is that all these theoretical contributions do not succeed in explaining why, notwithstanding their forecasts, polarisation and concentration processes, like territorial disparities, continued. As the most recent convergence studies show, at a sub-national level, territorial disparities are constant among the block of 15 EU countries, in rapid growth among new members (Paas and Schlittle, 2008), and increasing when shifting from the national and regional level to a sub-regional level (Straubhaar et al., 2002). Moreover, Mora (2008) shows that disparities emerge because of a growing sectorial specialisation and an increasing gap in human capital levels. Empirical evidence also shows that cities are not disappearing, but have rather reaffirmed their centrality in the globalised economy, where spatially dispersed activities are integrated at a planetary level (Hospers, 2003).

If, after the demise of Fordism, IDs seem to have suited the new productive needs, economic globalisation now requires a further shift in the techno-economic paradigm, because clusters are no longer able to provide the conditions for facing global competition. Nowadays, relative prices have changed and competition increasingly requires the continual introduction of process and product innovation, which are strongly knowledge-based urban activities.

Cities, by protecting against risk and uncertainty, enable transaction costs to be reduced through cognitive inputs, the labour market and variety of suppliers (Camagni, 1993). Thanks to urban agglomeration economies − which concern the concentration of different and not necessarily interrelated economic activities, the sharing of transport infrastructure, public services and highly advanced services − many cities during the '80s succeeded in reversing the decline due to the crisis in urban manufacture (Storper, 1996). Activities in new economic branches (based on soft-inputs and on rapidly changing goods and services outputs) replaced the manufacturing activities inside urban areas, generating, in some cases, a geographical concentration of industries (industrial urban sub-systems) resembling that of the marshallian districts (Amin and Graham, 1999). Furthermore, as well as the delocalisation of productive activities all over the world, globalisation implies the concentration of management and control activities (and their related services and infrastructures), and this is confirmed by empirical evidence: the heads of the global value chains of large multinational firms have polarised in the main global cities (Sassen, 1991).

Scholars from different fields have provided different explanations of the features that make the city a suitable place for activities related to knowledge creation and innovation. According to Jacobs (1969), the *mixité* of economic activities within the city and the socio-cultural

heterogeneity of inhabitants are the most suitable conditions for the creation, transmission and re-shaping of knowledge. Cities are characterised by a continuous internal and external interaction which permits individuals and organisations uninterruptedly to process "signals" and "impulses", generating and spreading knowledge, enhancing the productivity and professionalism of employees and entrepreneurs. As a result, urban contexts can count on a ceaseless process of human capital enrichment that allows rapid technological change.

The neoclassical perspective suggests the importance of certain features that make the city particularly attractive for highly skilled workers (young people with a high level of education and income), such as consumer-oriented services, urban and climatic amenities, wage-enhancing opportunities and quality of life (Glaeser 2005). Florida (2002), for his part, focuses on the importance of tolerant contexts with a high quality of life that attract creative classes to congregate. To intercept this type of worker, firms would need to elect the same localisation for their plants, triggering a process of cumulative causation.

But the story is perhaps much richer. Storper and Scott (2009) stress the relevance "of selective geographical matching of productive resources, skills and institutions of coordination", which would jointly be able to explain the basic source of urban dynamism. Applying these statements to the Italian case highlights interesting stylized facts. From the point of view of the matching productive resources and skills, recent economic history shows that:

a) The tertiarisation process which has occurred since the '80s is deeply interrelated with the manufacturing sector, which remains an important driving force of the national economy[1]. In the '80s, indeed, most manufacturing firms began outsourcing many activities, such as book-keeping, logistics, maintenance, legal activities, marketing, cleaning services and staff training. As a result, service activities, previously carried out by employees inside firms, are now autonomous enterprises and, consequently, their employees, who were registered in the manufacturing sector, are now counted in the service sector (Gallino, 2003; Calafati, 2009).

b) The spatial outcome of that tertiarisation process has been the concentration of services, and particularly knowledge-creating services, in urban areas, as described above.

c) A sort of division of labour between urban areas and IDs has also emerged. As in a modern version of the Weber theory of localisation of industrial activities, cities furnish creativity, innovation and knowledge, which represent now basic raw materials and strategic assets for the manufacturing sector. Moreover, cities work as knowledge gate-keepers (Morrison, 2008), being the interface between the local and the global level. They allow IDs to build relational networks out of their local context, expanding their operative "boundaries" (IRSO, 2010). In this perspective, the interlinking of IDs and urban systems seems to be crucial if processes of endogenous development are to be sustained and global competitiveness faced.

[1] In 1991, 2001 and 2007 manufacturing employees accounted, respectively, for 29.1%, 25.3% and 25.3% of the total employed workforce.

d) The possibility of establishing and improving such a link is closely related to the so-called *industrial commons* such as universities, the financial system, research and advanced services poles, hi-tech know-how (Pisano and Shih, 2009).
e) Urban marketing policies and targeted negotiations are essential to attract the knowledge-based and most innovative activities, and can have cumulative effects thanks to the mechanism of endogenous development (Calafati, 2009).
With reference to the view of the knowledge economy we have developed in these pages, it is however worth examining the interlink that exists (or could form) between the city and IDs, as regards the crucial domain of knowledge creation, that is the capabilities of dealing with cognitive codes. By labelling as "knowledge-creating activities" (KCS), those economic services which are expressly devoted to the reshaping of cognitive codes − that is, *Learning II* − we argue that they prefer (a) to cluster in the city, to take advantage of the generalised "buzz" that forms, not only within their somewhat closed circles, but in the wider urban arena, and specifically (b) in cities that are placed near IDs or within industrial milieus. The next section is devoted to exploring this hypothesis.

3 New relationships between the city and the "countryside" in the knowledge age

Our approach to knowledge-based activities differs from both the KIBS (Miles et al., 1995) and the Creative Industry (DCMS, 2001) approaches. It differs from the first because it does not take into consideration those services that, although they have a high technological content, mainly make applicative use of existing knowledge, such as "Data processing", "Database activities", "Maintenance and repair of offices, accounting and computing machinery". By contrast, KCS include "Media" as well as other public activities, such as "Universities and Research Centres", that are not recorded among KIBS. On the other hand, KCS differ from Creative Industry because they do not encompass the entire creative chain, from the inventive conception and design to the manufacturing production and retail, but only the primary components of this chain, which are inherently concerned with *Learning II*[2].

3.1 Methodological aspects

Before seeking an insight into the Italian geography of KCS, let us define the spatial unit of analysis, the economic categories we will focus on, and the index we will make use of to describe them. As far as the spatial unit is concerned, the choice has fallen on Local Labour Systems (LLS) (Istat, 2005). These are defined as clusters of municipalities which are aggregated on the basis of labour commuting flows. LLS, nowadays, are the only spatial metric in Italy that render meso-territorial functional relationships (Barbieri and Causi, 2005).

[2] For details, see Compagnucci, Cusinato (2011).

This makes it possible to account for the profound territorial changes which have occurred in Italy since the '70s, the outcome of which has been the coalescence of neighbouring municipalities in urban systems, which are functionally interrelated although not recognised as autonomous institutional entities (Calafati, 2009).

Concerning the classification of economic activities, the focus has moved from placing the prime source of creativity on the accumulation and refinement of knowledge according to a given interpretative code, to aptitudes in handling and articulating interpretative codes, that is from *Learning I* to *Learning II*. On this basis and after having tested the main international classification (KIBS − Knowledge Intensive Business Services, European Innovation Monitoring System, 2005; CI-DCMS–Creative Industries, Department for Culture, Media and Sport, 2001) with reference to the Italian case, we propose an original classification. Through a semantic analysis of the definition of five-digit economic activities supplied by Istat[3], we have reclassified them in order to extract the ones which handle interpretative codes as their normal activity and which we call "Knowledge-Creating Activities" (KCS).

Table 1 - Classification of Knowledge-Creating Services

Ateco cod.	Private Core KCS	Ateco cod.	Core Related KCS
22110	Publishing of books	22150	Other publishing
22120	Publishing of newspapers	72100	Hardware consultancy
22130	Publishing of journals and periodicals	74141	Financial consultancy
22140	Publishing of sound recordings	74142	Labour consultancy
72200	Software consultancy and supply	74143	Agrarian consultancy
72601	Telematic, robotics, eidomatic activities	74146	Commercial information agency activities
72602	Other computer related activities	74145	Public relations
74130	Market research and public opinion polling	74150	Management activities of holding companies
74111	Legal activities	74203	Integrated Engineering activities
74201	Architectural activities	74205	Minining research activities
74202	Engineering activities	74811	Photographic activities
74401	Advertising	92200	Radio and television activities
74845	Designers	92310	Artistic and literary creation and interpretation
92110	Motion picture and video production	92400	News agency activities
73100	Research and experimental development on natural sciences and engineering	74144	Business and management consultancy activities
73200	Research and experimental development on social sciences and humanities	74204	Aerial photogrammetry and cartography activities
Ateco cod.	**Public Core KCS**		
92510	Library and archives activities	80303	Other higher education
80301	Higher education-3 years bachelor	85114	University hospitals
80302	Higher education-5 years bachelor	92520	Museums activities and preservation of historical sites and buildings

Source: Our elaboration of Istat classification of economic activities (Ateco 1991).

As shown in Table 1, three sub-groups can be distinguished among KCS:

[3]The glossary of economic activities can be found at http://www.istat.it/strumenti/definizioni/ateco/

1. *Core KCS*, whose normal mission consists expressly in handling interpretative codes. Within this group, a further divide is made between *Private Core KCS* and *Public Core KCS*, on the basis of the weight of the private and public sector within them.
2. *Core-Related KCS*, which concern those activities that normally interact with interpretative codes, although this is not expressly readable in the Ateco definition.

As regards the methodological aspect we conclude with the choice of the localisation index by which to map KCS. Although the literature generally makes use of the *Localisation Quotient*, which relates employees in a certain sector to total employment, we prefer to resort to a *Density Localisation Quotient* (from now on DLQ), which relates KCS employees to inhabitants. This choice allows monitoring of two relevant aspects: a) the relative importance of each economic activity, not with respect to total employees (which may be a very low figure), but to the demographic size of the entire local milieu; b) the presence of structural differences between the labour markets in Northern and Southern Italy. In fact, the latter suffers from high rates of unemployment and inactivity.

The DLQ index is calculated as follows:

$$DLQ = \frac{\frac{E_{k,i}}{P_i}}{\frac{E_k}{P}}$$

where $E_{k,i}$ is the number of KCS employees in the LLS i, P_i is the number of inhabitants of LLS i, Ek is the total number of KCS employees in Italy, and P is the total number of Italian inhabitants. An LLS is specialised in a certain economic sector when the relative value of *DLQ* is higher than 1.

3.2 Cities, manufacturing sector and KCS

Total KCS employed more than 1.1 million persons in 2001 (they were about 750,000 in 1991), equal to 5.7% of total Italian employment (4.2% in 1991). Table 2 shows that 61% of them belong to Private Core KCS, which almost doubled their employees and significantly contributed to the increase of the total KCS sector between 1991 and 2001. Public Core KCS remain the smallest in terms of employees, even if their growth rate was 41% in the last decade. Finally, the Core-Related KCS, which are the least distinctive KCS sector, are also the least dynamic in terms of growth rate, equal to 11.2%.

Table 2 - Number of employees in KCS, KIBS and CI-DCMS sectors, 1991 and 2001

Year	Public KCS	Private KCS	Core-Related KCS	KCS	KIBS	CI-DCMS
1991	387.876	134.127	252.370	774.373	863.533	2.108.327
2001	671.830	181.379	275.936	1.129.145	1.570.220	2.161.410

Source: Our elaboration of Industry and Services Censuses, Istat 1991 and 2001

The Gini index calculated for population, manufacturing employees and KCS employees at the level of LLS and weighted for their area shows that KCS are the most concentrated activities. Private Core KCS in 2001 have an index equal to 0.893, which is higher than KIBS (0.855) and CI (0.833) (Table 3).

Table 3 - Gini Index-weighted for LLS surface area, 1991 and 2001

Variables	1991	2001
Population	0.718	0.716
Manufacturing employees	0.766	0.741
CI employees	0.808	0.833
KIBS employees	0.849	0.855
KCA employees	0.867	0.869
Core Related KCA employees	0.864	0.879
Public Core KCA employees	0.943	0.940
Private Core KCA employees	0.893	0.893

Source: Our elaboration of Industry and Services Censuses, Istat 1991, 2001

Chart 1 - Total KCS (DLQ>1)

Chart 2 - Private Core KCS (DLQ>1)[4]

All three classifications, moreover, show a much higher concentration than population and employees in manufacture. Furthermore, Private Core KCS seem to be a peculiar urban phenomenon: as shown by Charts 1 and 2, of the 34 LLS with DLQ>1, 31 are provincial or regional capitals; the LLS with DLQ>1.5 include the two largest Italian metropolitan areas

[4] Light gray is for 1< DLQ <= 1,1; gray for 1,1 < DLQ <= 1,5 and dark grey for DLQ > 1,5.

(Milan and Rome) plus Turin, Bologna, Florence and Padua, each of them having more than 500,000 inhabitants. Of the remaining five LLS, three are provincial capitals (Trento, Pisa and Parma), Mezzolombardo is integrated with Trento, and Ivrea, which is close to Turin, has a peculiar history depending on the presence of Olivetti (a computer science-based firm).

A further contribution is given by Charts 3 and 4, which show the intersection between LLS specialised in Private Core KCS (34 units) and IDs (156 unit), as identified by Istat (Istat, 2005). The very low number of spatial intersections (5) seems to strengthen the hypothesis we stated in paragraph 3.2, according to which KCS are urban activities strictly integrated with industry. However, as these Charts show, the integration occurs according two very different models: in the case of IDs (Chart 3), the LLS specialised in KCS are spatially complementary to IDs, often specialised in the "Made in Italy" sector[5] (Becattini, 1998) − a situation which reflects the historical complementarity between cities and IDs −, while when high-tech industry (OECD, 2005) is taken into account, a strong spatial integration clearly occurs (Chart 4). As a consequence, we can argue that the Italian IDs are not only generally peripheral with respect to the major urban systems but that they might be "dependent on" them for the supply of KCS. On the contrary, LLS specialised in hi-tech industries, frequently overlap with LLS characterized by a substantial presence of Private Core KCS, showing a remarkable level of spatial correlation.

Chart 3 - Private Core KCS > 1 and ID[6]

Chart 4 - Private Core KCS > 1 and Hi-technology industries[7]

[5] In Italy, 232 LLS out of 286 are specialised in the "Made in Italy" sector, but only 7 of them are also specialised in Private Core KCAs.

[6] LLS specialised in Private Core KCS= white with black boundaries; Industrial districts = light gray.

[7] LLS specialised in Private Core KCS = white with black boundaries; Hi-tech LLS = light gray.

4 Knowledge-Creating Services and Functional Regions

The analysis of KCS through the metric of LLS renders some functional specialisation between cities – which are specialised in KCS - and their surrounding areas - in which we can find LLS specialised in manufacturing activities. Identifying the boundaries of cities' surrounding areas means detecting the LLS which are functionally interrelated with urban LLS. To do this, the introduction of the concept of Functional Regional (FR) is required.

While using LLS permits us having a map of horizontal territorial relationships, represented by the decomposition of national territory in local systems, FR gives count of vertical (hierarchical) relationships. The identification of vertical relationships had been foreseen by the Istat procedure, which, once identified LLS, should have led to the identification of spatial configurations that are placed at an intermediate level (meso-regional) between the local (micro-regional) and national (macro-regional) level (Istat, 1997). Despite the importance of the subject, this aspect of the process of regionalization did not lead to a concrete outcome.

In Europe, the concept of Functional Urban Region (FUR) was introduced in 1980 from Hall and Hay[8].They applied a uniform methodology over the whole European territory to identify pertinent units of analysis in order to assess the ongoing urban growth processes and compare it to the US experience. The implementation of this method using data from the 2001 census brought to the identification of 83 FUR in Italy (Boix and Veneri, 2008). Unfortunately, in this paper we can not use the category of FUR, since its identification process is municipality-based while our unit of analysis is the LLS. To overcome this problem a) we took into account all the 83 Italian FUR, b) we chose those in which the DLQ related to KCS was greater than 1.5, c) we considered all the municipalities involved in and d) we selected all the LLS containing at least one of these municipalities. The set of LLS containing at least one municipality of the same FUR, is defined Functional Region. The decision to consider only the FR with a DLQ grater or equal to 1.5 depends on the consideration of the relative position of Italian cities respect to European ones in terms of knowledge creation and information flow. In 2008, the publication of the Worldwide Centres of Commerce Index showed the marginal role played by the two largest Italian cities, Rome (18^{th} position) and Milan (19^{th} position) (Table 4). Their unflattering performance has led us to consider a DLQ significantly greater than 1, in order to analyze the most distinguishing LLS specialised in KCS.

Following this procedure, we have identified 8 FR (Chart 5), which are heterogeneous both in dimension and structure: Turin, Milan, Trento, Padua, Parma, Bologna, Florence and Rome.

[8] The authors chose to make a comprehensive regionalization of Europe, in the wake of the aims that inspired the work of Berry, which is considering the possibility of disurbanisation of urban phenomena. The operating procedure involves the identification of a single central location or several adjacent locations on the basis of size criteria. Are being associated to it, locations of the metropolitan belt that meet a certain threshold of employment density and other places for which the flow of commuters to the central location is dominant. For those areas where a central location with urban features does not emerge, the concept of Local Labour Market Area is being applied, aggregating adjacent locations between which there are substantial commuting flows.

Table 4 - Ranking of European Cities according the Worldwide Centers of Commerce Index

City	Country	Knowledge Creation and Information Flow			Global rank	
		Index_Value	Rank_world	Rank_EU	Rank_2007	Rank_2008
London	United.Kingdom	62,35	1	1	1	1
Paris	France	51,65	4	2	8	7
Zurich	Switzerland	47,84	6	3	19	15
Geneva	Switzerland	45,28	8	4	35	40
Stockholm	Sweden	44,15	9	5	17	16
Copenhagen	Denmark	39,57	13	6	15	14
Berlin	Germany	39,41	15	7	24	23
Amsterdam	Netherlands	39,11	16	8	11	10
Hamburg	Germany	35,38	27	9	*	33
Madrid	Spain	34,10	28	10	16	11
Vienna	Austria	32,08	33	11	30	26
Brussels	Belgium	31,72	34	12	29	30
Munich	Germany	31,53	35	13	26	27
Barcelona	Spain	30,63	36	14	33	38
Frankfurt	Germany	30,41	37	15	7	8
Dublin	Ireland	28,63	38	16	31	31
Dusseldorf	Germany	28,32	39	17	*	39
Rome	Italy	24,50	43	18	43	47
Milan	Italy	22,89	45	19	25	20
Prague	Czech.Republic	20,76	48	20	41	49
Budapest	Hungary	20,14	50	21	40	52
Lisbon	Portugal	16,58	55	22	*	46
Athens	Greece	15,61	58	23	*	55
Warsaw	Poland	15,16	60	24	49	59

Source: http://www.mastercard.com/us/company/en/insights/pdfs/2008/MCWW_WCoC-Report_2008.pdf

Chart 5 - Functional Regions (FR)

Table 5 - FR value added, population and area, 2005

FR	VA_Agr	VA_Ind	VA_Ser	VA_Tot	pop 2005	Area
BOLOGNA	*2,5*	*3,7*	*3,0*	*3,2*	*2,5*	*1,9*
FIRENZE	*2,1*	*2,9*	*2,8*	*2,8*	*2,4*	*1,5*
MILANO	*4,4*	*19,0*	*15,6*	*16,2*	*12,0*	*3,1*
PADOVA	*1,5*	*2,5*	*1,9*	*2,0*	*1,7*	*0,8*
PARMA	*1,5*	*2,1*	*1,4*	*1,6*	*1,2*	*1,4*
ROMA	*5,3*	*6,1*	*12,9*	*10,9*	*8,8*	*5,7*
TRENTO	*1,0*	*0,8*	*0,8*	*0,8*	*0,7*	*1,1*
TORINO	*2,4*	*5,6*	*5,0*	*5,1*	*4,6*	*3,4*
Other	*79,1*	*57,2*	*56,6*	*57,3*	*66,2*	*81,2*
Total	*100,0*	*100,0*	*100,0*	*100,0*	*100,0*	*100,0*

Source: Our elaboration on ASIA database, Istat 2005

The FR identified represent, in 2005, 19% of the total Italian surface (Table 5), 34% of the Italian population and 43% of the total value added (with services and industry accounting for, respectively, 43.4% and 42,8%). The identification of FR allows us to investigate the structure of the areas surrounding the most knowledge-oriented Italian urban systems.

Chart 6 gives a preliminary picture of the level of heterogeneity we found. The structural difference between the FR of Milan (in which 20 LLS are contained) and Rome (in which 21 LLS are contained) is particularly striking: in the former, we observe 10 LLS classified by Istat as ID (Istat, 2007) while in the latter they are almost absent (there is only only 1 ID). The other FR in which the district nature is less relevant are Trento and Turin, while in the FR of Bologna, Parma, and especially of Florence and Padua, there is a greater presence of ID.

Regarding the relevance of Hi-tech manufacturing, Chart 7 shows that the LLS with this type of specialization are preferably located in the central areas of all FR, in coexistence with KCS.

Chart 6 - FR and ID[9], 2001

Chart 7 - FR and SLL Hi-tech[10], 2001

Table 6 and Chart 8, finally, offers more detailed information in relation to the structure of FR. Six types of LLS have been considered, accordingly to the classification supplied by Istat (Istat, 2007): urban LLS, not manufacturing LLS, LLS without specialisation, Made in Italy LLS, heavy manufacturing LLS and pivot LLS. These latter are all classified as urban ones, with the exception of the one of Turin, which falls into the heavy manufacturing category.

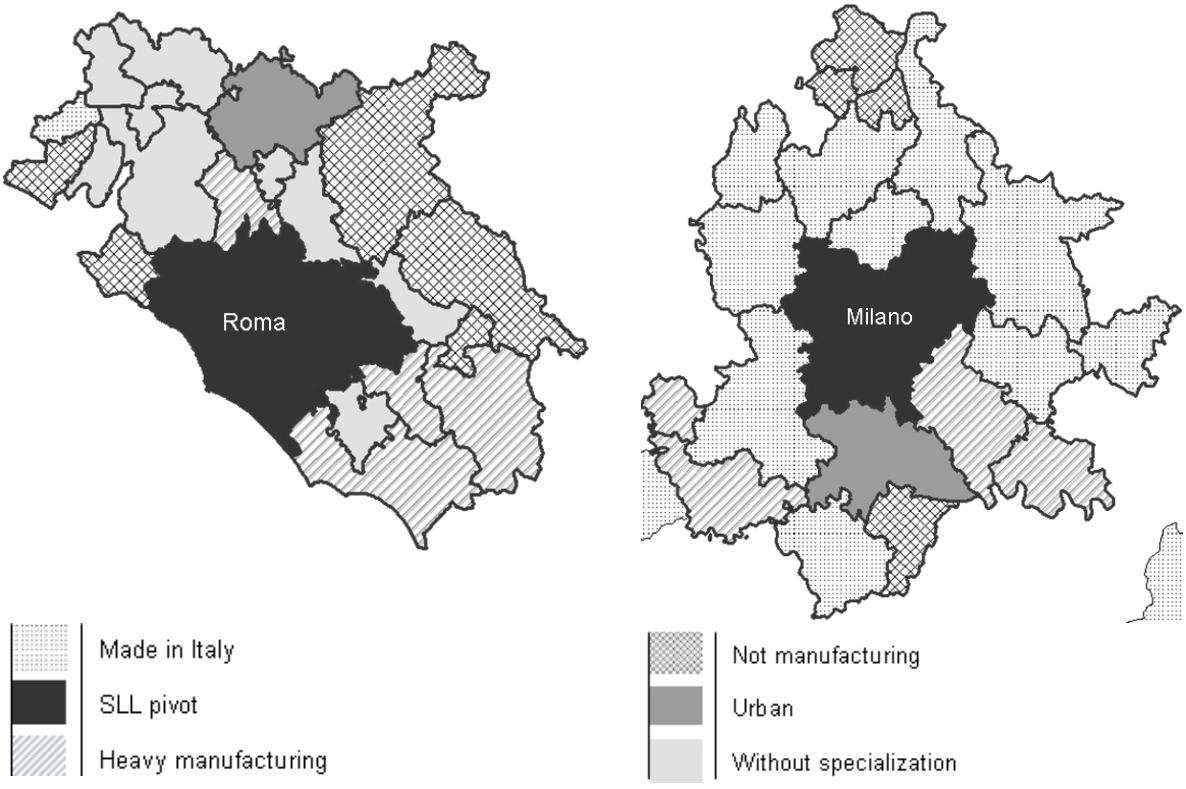
[9] Grey = LLS/Industrial Districts.
[10] Grey = LLS/Hi-tech industries.

Table 6 - Crosstab between FR (rows) and type of specialisation of their LLS (columns), 2001

			sottoclass					
			SLL senza spec.	SLL urbani	SLL non manifatt.	SLL Made in Italy	SLL manifatt. pesante	Total
cod_fur	Resto ITA	Count	210	34	120	195	42	601
		% within cod_fur	34,9%	5,7%	20,0%	32,4%	7,0%	100,0%
	BO	Count	0	2	0	5	1	8
		% within cod_fur	,0%	25,0%	,0%	62,5%	12,5%	100,0%
	FI	Count	0	1	0	6	1	8
		% within cod_fur	,0%	12,5%	,0%	75,0%	12,5%	100,0%
	MI	Count	0	2	4	10	4	20
		% within cod_fur	,0%	10,0%	20,0%	50,0%	20,0%	100,0%
	PD	Count	0	1	0	3	0	4
		% within cod_fur	,0%	25,0%	,0%	75,0%	,0%	100,0%
	PR	Count	1	1	0	3	0	5
		% within cod_fur	20,0%	20,0%	,0%	60,0%	,0%	100,0%
	Roma	Count	9	2	5	1	4	21
		% within cod_fur	42,9%	9,5%	23,8%	4,8%	19,0%	100,0%
	TN	Count	0	2	2	3	0	7
		% within cod_fur	,0%	28,6%	28,6%	42,9%	,0%	100,0%
	TO	Count	0	1	1	6	4	12
		% within cod_fur	,0%	8,3%	8,3%	50,0%	33,3%	100,0%
Total		Count	220	46	132	232	56	686
		% within cod_fur	32,1%	6,7%	19,2%	33,8%	8,2%	100,0%

Source: Our elaboration on ASIA database, Istat 2005

Chart 8 - Specialisation of LLS in the FR of Roma and Milano



In almost all the rest of the territory of FR, Made in Italy is the most relevant category: apart from the FR of Rome and of Trento, all the other FR have more than half of their LLS specialised in this sector.
In comparative terms it is worth mentioning the difference between the two major FR: Rome and Milan. In the first, which is the FR with the highest relative and absolute value of non-specialized employment areas, there is only 1 LLS which is specialized in Made in Italy, against the 10 LLS from the Milan FR. If we can observe a greater heterogeneity and articulation of the economic structure in Milan (as in the other FR) – fact that suggests a more pronounced division of labor and functional specialization in the FR – the FR of Rome is the more monocentric one, whose evolutionary trajectory depends on the performance of its centre.
In conclusion, what emerges from the analysis of the structural characteristics of the FR is the high level of heterogeneity in relation to the functioning of their economies and to the relations between their centres (specialized in the provision of services of high capital intensity) and the rest of the territory. In particular it is worth highlighting the structural difference between the two Italian major FRs (which contain the only two Italian cities in the ranking of the world's major centers), whose operating modes, according to the findings of this preliminary analysis, differ substantially.

5 Conclusions

With reference to the Italian case, empirical evidence about the spatial relationships between manufacturing (we can suppose which makes large use of syntactic communication) and Knowledge-Creating Activities (which grounds on dialogical communication), show that KCS are normally set amidst manufacture milieus, not rarely in big cities which are also a place for medium/big industry, often Hi-tech-oriented. This seems proving the strong linkages occurring between dialogical and syntactical-based activities, which both presumably pivot on the figure of the entrepreneur (the true translator between the two domains).
This strong functional-and-spatial interrelationship between industry and KCS is likely to be at the origin of a sort of natural-urban monopoly, in that the competences required for having access to this particular network evolve over time, and can be acquired only by active and already integrated participants. This implies that regions lacking in industry are likely to be excluded not only from having KCS at present, but from the prospect of playing some role in this domain in the future, with the consequence that regional inequalities are doomed to widen. It also implies that clusters of small industries (mainly ID), which generally locate in secondary urban contexts, depend on the main cities for having access to KCS: in this case the question remains to ascertain if entrepreneurs have enough competences to dialogue with them. This ultimately means that IDs need not only the city but an urban culture to interchange with its main activities, that is KCS: a topic that requires further investigation.

The geography of the functional specializations which emerged in relation to the FR suggests us the importance of:

a) developing and pointing out the issue on the identification of FR, on the basis of which the phenomena of the division of labor, functional specialization and the creation of synergistic relationships at the meso-regional level will be investigated;

b) highlighting the importance of the synergistic relationship between the functional specialization of the urban centers of the FR and manufacturing in the surrounding areas, especially in the Italian context, in which the secondary sector still plays a relevant role;

c) focusing on the structural features (productive specializations, characteristics of human capital) and on public policies in place locally to try to predict the evolutionary trajectories of the single FR within the paradigm of the knowledge economy;

d) accompanying the theoretical transition from Learning I to Learning II with the introduction of appropriate indicators that are able to grasp the conditions of the milieus fostering the development of knowledge activities.

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Statistical appendix

Table I. List of LLS contained in each FR

Cod_SLL	Nome SLL	Functional region
7	TORINO	Torino
9	CRESCENTINO	Torino
5	RIVAROLO CANAVESE	Torino
6	SUSA	Torino
2	CIRIÈ	Torino
25	ASTI	Torino
14	ALBA	Torino
4	PINEROLO	Torino
29	CASALE MONFERRATO	Torino
22	SALUZZO	Torino
1	BARDONECCHIA	Torino
3	IVREA	Torino
131	TRENTO	Trento
124	MEZZOLOMBARDO	Trento
116	ARCO	Trento
118	BORGO VALSUGANA	Trento
117	BLEGGIO INFERIORE	Trento
120	CLES	Trento
128	ROVERETO	Trento
350	ROMA	Roma
355	LATINA	Roma
360	FROSINONE	Roma
349	COLLEFERRO	Roma
338	CIVITA CASTELLANA	Roma
343	VALENTANO	Roma
362	AVEZZANO	Roma
347	RIETI	Roma
348	CIVITAVECCHIA	Roma
339	MONTALTO DI CASTRO	Roma
359	FIUGGI	Roma
303	TERNI	Roma
352	VELLETRI	Roma
302	ORVIETO	Roma
344	VITERBO	Roma
345	FARA IN SABINA	Roma
340	MONTEFIASCONE	Roma
346	MAGLIANO SABINA	Roma
337	ACQUAPENDENTE	Roma
342	TUSCANIA	Roma
351	SUBIACO	Roma
200	PARMA	Parma
203	REGGIO NELL'EMILIA	Parma
198	FIDENZA	Parma
199	LANGHIRANO	Parma
197	BORGO VAL DI TARO	Parma
161	PADOVA	Padova
151	CASTELFRANCO VENETO	Padova
159	ESTE	Padova
162	ADRIA	Padova

Cod_SLL	Nome SLL	Functional region
57	MILANO	Milano
98	LODI	Milano
79	ROBBIO	Milano
80	SANNAZZARO DE' BURGONDI	Milano
97	CODOGNO	Milano
44	VARESE	Milano
60	BERGAMO	Milano
41	BUSTO ARSIZIO	Milano
46	COMO	Milano
95	LECCO	Milano
58	SEREGNO	Milano
84	VOGHERA	Milano
83	VIGEVANO	Milano
86	CREMA	Milano
74	ORZINUOVI	Milano
48	MENAGGIO	Milano
49	SAN FEDELE INTELVI	Milano
81	STRADELLA	Milano
45	BELLAGIO	Milano
78	PAVIA	Milano
249	FIRENZE	Firenze
245	SAN MARCELLO PISTOIESE	Firenze
266	MONTEVARCHI	Firenze
286	PRATO	Firenze
248	EMPOLI	Firenze
244	PISTOIA	Firenze
264	BIBBIENA	Firenze
246	BORGO SAN LORENZO	Firenze
213	BOLOGNA	Bologna
217	CENTO	Bologna
250	FIRENZUOLA	Bologna
214	GAGGIO MONTANO	Bologna
215	IMOLA	Bologna
223	LUGO	Bologna
216	ARGENTA	Bologna
208	MODENA	Bologna

Chart I - Specialisation of LLS in the FR of Torino, Parma, Padua, Firenze, Bologna and Trento