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The challenge of a place-and network-based approach to development in Italian regions

Massimo Arnone[a],*, Chiara Cavallaro[b]

aUniversity of Palermo, Viale delle Scienze, Palermo 90100, Italy
bISSiRFA-CNR, Via dei Taurini 19, Roma 00186, Italy

Abstract

This paper investigates the role of research networks inside local development processes to increase the competitiveness of underdeveloped territories. This paper, within the scope of local development theory, aims to describe the state of the art on the regional research systems resulting largely from programs co-financed between 2000 and 2013, with which the various regions are preparing to engage in programming for the period 2014-2020. The extent of consistency between the objectives of sectorial specialization set by policies previously or currently implemented and those in the planning phase (S3) is assessed, as is their connection with existing territorial specializations at a regional level.

Keywords: Smart Specialization (S3), Technological District, Research Network, Quadruple Helix

1. Introduction: context of reference and aims of the paper

The strategy for the period 2014 - 2020 foresees a particular attention to the place-based development (Barca, 2009), to the partnership in the planning of the interventions, to the definition of the Smart Specialization Strategy (S3), and to innovative logic not exclusively regarding the ICTs According to Foray (2011, 2014 2015), the concept of smart specialization is "the ability of an economic system to create new specializations through the discovery of new connected opportunities to the concentration and local agglomeration of resources and competences (….)".

* Corresponding author. Tel.: +39-09123895214.
  E-mail address: massimo.arnone@unipa.it

The implementation of this new way of thinking of the policy in favour of local innovation can be considered as a way to overcome the gap between endogenous development and exogenous development.

Nevertheless, this evolution is possible by maintaining a delicate equilibrium between vertical (specialization) and horizontal (diversification) dimensions of the economic structure (Antonietti *et al*., 2015). In the case of the industrial districts, where the first dimension dominates, we find the risk of lock-in that reduces the opportunities of discovery and exploitation of innovations. In the case of locations of firms that conduct to prevail the second dimension, it becomes more difficult to exchange critical knowledge and the creation of generative relationships among the local actors. On such weaknesses the debate is grown on "related variety" and "related branching", that sees an active role of the cities with their complexity, variety of the demand and social and economic actors, as incubators of innovation, able to also include traditional subjects in a wider system of relationships [Ciapetti and Dardanelli, 2011, Morgan 2013, Boschma 2014, Frenken *et al*., 2007).

In the light of these considerations, the paper aims to respond to three aims:

- Mapping the various types of research networks in Italy;
- Illustrating the progress of regional and national interventions dedicated to those involved in research, innovation and technology transfer in the context of European planning aimed at promoting greater integration in the use of structural funds;
- Verifying the existence of possible synergies in terms of sectorial specialization between the research networks with the traditional industrial districts at an initial stage, and with the priorities emerging in the SS3s of the Italian Regions.

These objectives show that the paper restricts itself to studying in depth the cohesion interventions of the EU during the period 2007- 2013 devoted to the evolution of territorial networks, Technological Districts, Clusters, Poles of excellence, Centers or Scientific Parks in light of the presence of the existing industrial districts in the different regions. These subjects, that compete to compose the regional research system are the partnerships that have helped the regions to elaborate the Smart Specialization Strategy (SS3) and represent an "accumulation" of tied up routine to realized interventions until today. Therefore they must be considered an aware "territorial social capital" necessary also to form the critical mass of a politics that aims to valorize the interventions in light of a new strategy: that of a sustainable inclusive and founded upon the knowledge society. However, they are only a part of the innovative context, that must include besides the industrial and research fabric, the politics of public procurement able to apply innovative solutions for the demand and the policies of inclusion of the present human resources.

2. Knowledge networks and interventions of EU cohesion planning 2007-2013

The mapping of previous policies to the construction of regional research systems shows the following picture:

Table 1. Research organizations and innovation in Italy: a map

REGIONS	TD	IP	UNI.	STP	EC	RPO	TOT
Piedmont	1	17	4	2	1	21	49
Veneto	1	3	4	2	0	15	23
Friuli Venezia Giulia	2	4	2	2	0	10	22
Valle D'Aosta	0	1	1	0	0	0	2
Lombardy	4	6	14	4	1	35	59
Trentino Alto Adige	1	1	3	0	0	5	10
Emilia Romagna	1	10	4	0	1	17	35
Liguria	3	4	1	0	0	13	20
Tuscany	1	2	7	3	1	33	48
Umbria	1	0	2	2	0	5	8
Marche	1	3	5	1	0	2	9
Lazio	3	2	12	3	1	47	72

Abruzzo	1	3	3	0	0	5	13
Molise	1	1	1	1	0	0	4
Campania	1	2	7	1	2	30	46
Puglia	4	1	5	0	0	28	39
Basilicata	1	0	1	0	0	3	5
Calabria	2	9	4	1	0	12	27
Sicily	3	4	4	2	0	27	39
Sardinia	2	2	2	2	1	14	22
North	13	46	33	10	3	116	220
Center	6	7	26	9	2	87	137
South with Islands	15	22	27	7	3	119	195
Italy	34	75	86	26	8	322	552

SOURCE: Elaboration ISSiRFA-CNR on MIUR, ADITE, CNR, ATLAS, APSTI data. Legend: Technological TD-districts, IP-innovation poles, UNI-University, STP - technological scientific parks, EC - Centers of excellence, RPO-research public organizations

Based on this framework, this section proposes a recognition of the investment that, in the EU cohesion policy 2007-2013 has been served by the regions on the network of innovative systems. The states of advancement of programs and projects have been examined closely, devoted to Research, Innovation and Technological Transfer (R&I&TT) realized in the regional and national (POR and PON) plans, that are:

• Priority 1 "Development of human resources". Objective 1.4 "to improve the abilities of adaptation, innovation and competitiveness of the people and the economic actors of the system";

• Priority 2 "System of R&S". Objective. 2.1 "to strengthen and to valorize the whole research and development industry and cooperation network among the research system and the firms, to contribute to the competitiveness and the economic growth; to sustain the diffusion and the maximum use of new technologies and advanced services; to raise the level of the competences and scientific knowledge and techniques in the productive system and in the institutions";

• Priority 7 "Competitiveness and occupation". Objective. 7.2 "to promote sustainable and inclusive processes of innovation and territorial development."

Because of the importance that this type of funds covers in the circle of the politics devoted to the research, the absence or the smallness of investments it was able in fact a signal of irrelevance to be considered e/o abandonment of such structures or lack of policy in this circle.

At the end of June 2015 the selected projects were 168,536, the amount of appropriate financial resources amounted to 24.7% of the total financial allocation for the interventions of the cohesion politics, above all of public funding.

In terms of financial resources, two representations are possible:

• in the Regions that the new Cohesion Framework considers more developed or in a period of transition, the concentration of funds on the specific objective "R&D Systems" is found to be prevalent, both looking at the total (56.6% of funds) and the individual regional figures, with the exceptions of Abruzzi (18%), Molise (45,2%), and the autonomous province of Bolzano (46,6%). In the two Regions planning shows what is almost a dichotomy between the General Aims 2.1 and 7.2, while in the case of the Province of Bolzano between General Aims 1.4 and 2.1;

• in the "late developing" Regions and for the interventions attributed to the national Operating Programs, the relevance of the two General Aims 2.1 and 7.2, in addition to being clearly higher with regard to the development of human resources (8.19% of funds set aside for this aim), it is almost equivalent (49.37% General Aims of R&D Systems and 42.43% of General Aims. Competitiveness) in all the Regions with the sole exception of Calabria, where 16% of resources are also invested in General Aims 1.4, and 38% of public funding is set aside for General Aims - Competitiveness.

3. The collectives in the regional research systems

Within the scope of the projects devoted to these three objectives, we thus selected only those projects that introduced references to Technological Districts, Technological Bases, Cluster, Technological or Innovation Poles, Scientific or Technological Parks, or projects and useful tools designed "to produce a network system that allows to integrate, also to territorial level and with reference to the priority technological circles, all the resources and all the public and private subjects, developing in an integrated way the activities of fundamental Research, industrial, of technological transfer and of formation of the human capital, assuring also the attainment of a critical mass and levels of national and international excellence". Lastly, we show below the regional distribution of these research networks (Table 1).

The amount of these resources represents 33.9% of the total funds for R&D. As was expected, both in terms of number and entity of financing, this group of projects primarily falls within the General Objective devoted to the Research Systems. The great concentration of resources is the main feature of Operational Programs managed at a national level and in Piedmont. Shortly after Campania and Umbria regions.

In Sicily, as in Abruzzo and in the Province of Trento, the average size of the projects exceeds 1 million euros. In other regions, the average size amounts to under 1 million euros, while the projects for Veneto, Tuscany and Marche regions fall below 100,000 euros. The contribution of private individuals amounted to 29.2% of the total estimated cost, slightly higher than the 26.5% of the private financing overall of dedicated projects dedicated to R&D.

The more developed regions considered these actions as implementations of the "system". In the other regions, for example Sardinia, they were considered part of an innovative, territorial, sustainable and inclusive development process.

With reference to regions that for 2014-2020 will be considered "least developed", the actions managed at a national level focus solely on the "system" goal and represent the greatest amount of invested resources (53.5% of regional total). In the case of Puglia it underlines the aim of establishing networks to promote competitiveness and employment is stressed.

4. The new strategies for interventions between 2014 and 2020

The development of Smart Specialisation Strategy (S3), was a precondition, under the new EU programs 2014-2020, for the use of dedicated funds to Research and Innovation.

With S3 we aimed to provide a tool that could avoid the risk already highlighted elsewhere, and originating from the same Community policies, the policies imitating successful practices but totally disconnected from territorial assets. The further indication to seek a connection with the European priorities of investment in Research and Innovation, was aimed at pushing towards the creation of strategies that, also staring with the points of strength of the structural economic partners in the territory, were not excessively specialized, since this would make their exploitation difficult in terms of national and European critical mass.

The examination of the operative areas of these subjects, the policies already implemented and those currently being implemented (S3) and their connection with existing territorial specializations at a regional level was therefore the next step. The Industrial Districts were considered to check whether there was, or there is the possibility of sharing the sectoral specializations existing between existing industrial and technological districts and innovation poles, aware that the industrial districts are primarily placed in traditional sectors.

The comparison shows only an explicit relationship with the agri-food sector today subject to renewed attention. The strategies of the new planning approach seem above all correlated to the scientific technological areas of the subjects of the research system that are already in the territories. These strategic choices, still deeply tied to the offer of knowledge, are increasingly crucial for the starting of "smart" paths of local development. This would be instead of developing inter-connections, identifying the intermediate steps for the promotion of greater inter-regional and cross-sectoral cooperation, strengthening technology transfer processes and cognitive spillovers and coordinating this strategy with numerous macroeconomic constraints.

However, it is reasonable to conclude that, beyond the development of a sector of *Made in Italy* such as the agri-food industry, in the processing of S3 the weight of the persons and interests that belong to the research system is still prevalent.

At least two cases where interpretation is more complex should be cited:

• the case of the Puglia Region that in the 2007 - 2013 plan activated innovative tools such as living labs and promoted the use of public procurement as a stimulus to the growth of firms which were innovative or able to innovate, albeit on often small projects. These instruments were accompanied by the strengthening of clusters and technology parks of international importance. The region thus "anticipated" the logic of the "fourth helix" [Carayannis *et al*., 2011, Provenzano *et al*., 2015) (i.e. the introduction of the innovative model of an explicit intervention by the innovation users) that should characterize all future planning;

• the case of the Lombardy Region, which with reference to the Cohesion projects, seems to have invested little in the construction of networks, districts or excellence centers. However, the analysis of the CORDIS database related to the participation of Italian subjects to the Seventh Framework Programme of Research (7FP) shows how the located subjects in this region activated through this channel, competitive and liaison between firms and research, a loan equal to 148% of granted public resources (Italian or EU) by cohesion policy. Moreover, the reading of the strategic foundations of smart strategy in Lombardy shows an emphasis on the promotion of clusters of firms which had sprung up since the previous meta-districts, on the basis of an oriented marketing logic also supported by conscious innovative public demand and tight linkage at the international level (inclusion in "Kics specifications - Knowledge Innovation Communities ").

5. Conclusion

This work, starting with the existing research regional systems, has observed the situation of projects for the period 2014 - 2020. Some of them have the ability to produce innovative economic activity, also with international value. This occurs where there is a highly active social and economic fabric (for example in Lombardy) or local institutions able to properly analyze the context and promote instruments of a certain effectiveness (such as Emilia Romagna and Puglia). In these cases, the ability to exploit the new opportunities of the cohesion policies and other instruments of Horizon 2020 is expected.

In other cases, within an overall framework that does not disprove the gap between the northern and southern regions, it is believed that it is necessary to further develop a new role for regional and local institutions, such as "innovation and technology seekers", and that greater attention should be given to the demand by innovation users. These two elements could increase the chances of designing in the near future a "turning point" tool that modifies the established dichotomy between the two areas of the country.

An initial survey of the S3 strategies (McCann and Ortega-Argilés, 2013) attributed the failure to take off with an a-spatial characterization that makes it difficult to recognize the territorial specificities and how the latter can facilitate or impede the development of new skills and the implementation of targeted policy interventions. A second test, carried out for the EU by Jens Sørvik Kleibrink and Alexander (2015), also fails to reach unambiguously positive conclusions, but asks to stay the proceedings while waiting for the smart specialization strategy to materialize into actual programming actions. This task requires greater attention by Research to the innovative opportunities in the local production system but also to a greater appreciation and identification of existing skills.

As experienced in the case of the Puglia Region, a possible way of strengthening the territorial approach of the smart strategies is represented by Living Labs, defined by Bergavall-Kareborn *et al*. (2009) as "open innovation environments for real contexts where the innovation driven by users is represented by the co-creative process of new services, products and social infrastructure, including simultaneously the technological and social dimension in parternship between firms-citizens-government-university" They may also function as links between urban and rural areas connoted by major delays in the activation of effective territorial development processes.

A second element could be derived from the development of business networks, which in the literature (Malaspina, 2014) are defined as: "*a set of companies, legally independent, whose relations are based on trust relationships and in some cases on contract that look them, through joint investments, to realize an only*

production". The acquisition of a medium size - larger and more open to national or international markets, would allow this fabric of companies a stronger presence in establishing innovative paths.

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