

Do we really need a regional innovation agency? Some insights from the experience of an Italian region

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1. Introduction

In the present world societies and economies are experiencing an increasing integration process. The reasons behind this phenomenon are: the decrease of transportation costs, the liberalisation of the international trade, the rate of circulation of ideas, the rise of capital flows, and, finally, migratory strains.

The present globalisation wave is featured, in particular, for the participation into international markets of a noteworthy group of newly industrialising and developing countries (considering, for instance, the role of the two Asian “giants”: China and India) and the role of technical progress in the field of transportation and communication.

New information and communication technologies ease the organisation and the geographical control of widespread supply chains. The information-based activities are “unloaded”, hence, their inputs and outputs (digital information) can be transferred almost for free.

Globalisation promotes the development of countries: the most integrated economies grow faster, thanks to a wider access to the international markets of goods and services, and to the increase in labour productivity. Nevertheless, even in the globalisation process there are winners and losers, for both countries and individuals. There are some individuals which pay the short-term costs of the globalisation process: the trading opening generates redistributive effects, favouring some and penalizing others. Globalisation can lead to a rise in inequalities within countries.

Therefore, the growing globalisation brings to challenges which are harder than those in the past, in particular for less developed regions and for the firms located there. The dynamics of the last decade have put on the line the results reached by less developed regions. Productive systems based on: (i) relatively small enterprises and/or with few medium/large companies; (ii) relatively low-tech productions, in condition to be imitated and realised with lower costs in developing countries, face increasing difficulties. The improvement of technology, the free

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movement of capital and goods, and, in most cases, the facility to access to codified knowledge at global level, together with the need to quickly respond to the international competition, bring the different communities to the choice between make themselves ready for the new context and experience economical decline.

In this context innovation represents the route to increase competitiveness in regions¹. Ameliorating and overtaking the set of the most economically-efficient production techniques, represent the key growth factor for countries which already use these. Their development necessarily results from the advancing of techniques, through the conception of new and better products and the introduction of original techniques and organisational models.

Moreover, a growing number of studies (Kline and Rosemberg 1986; Baskerville and Pries-Heje 2003) highlight that innovative dynamic is notably based on multiple interactions between research, invention, innovation and production, since the sequence (traditionally considered linear), is in fact much more complex, and presents some fundamental characteristics:

- ✓ existence of interdependencies and complementarities between multiple and multidimensional factors;
- ✓ complexity and non-linearity of the relations between actors;
- ✓ complex feedback mechanisms and iterations between technology, science, production, market demand, institutions (Edquist 1997)

Innovative capacity is a complex phenomenon. It involves several actors and institutions. It is the result of human intelligence, of application and accident, of resources that in several modes are assigned to research. It makes simple measurement not possible. Expenditure in research and development is a decisive input, there is no doubt about it. However, it is not the only factor which matters. It is the whole institutional structure which participates to transform the resources employed in research into innovation, increase of productivity and, finally, higher well-being.

In this framework, two are the main guidelines for less developed regions. On one hand, bring in traditional manufactures growing contents of innovation: ability to modify products first, but also processes and organisation (to employ new technological opportunities) allowing dimensional growth and internationalisation. On the other hand, put on the side of these firms and productions, new firms and innovative services and productions which differ from the familiar ones: more based on technology, more differentiated from the products of developing countries. However, this process has to start from the valorisation of existing actors and competences.

This is the reason why the strengthening of the regional innovation system is required: give to traditional productions new solutions, new collaboration opportunities with academia and research; make know-how, high skilled human capital, ideas, patents, information and services for new market opportunities available to new companies.

Recent work on innovation system indicates that the region is a key level at which innovative capacity is shaped and economic process coordinated and governed (Cooke *et al.* 2004). From

¹ Studies on economic growth have always underlined the role of technical progress as development driver. The innovative capacity of a country is turned into goods, services, organisation of the productive process featured by higher quality. Product and process innovation support long term growth, increasing the overall productivity of the system.

the Nineties, the concept of Regional Innovative System (RIS) has become a widely used approach to explain the innovation process and pattern (Asheim *et al.* 2003). This concept comes from the perception that innovation is an interactive process “linked” to the territory, stimulated and influenced by many actors. This concept emphasizes the importance of clusters and geographical proximity as technological development catalysts. The competitive advantages in the global economy are often, as outlined by Porter, “local”, and are derived from concentration in a given region of highly specialised skills and knowledge, institutions, connected productive sectors and a qualified local demand. Since in this process there are many and various actors involved, and since it is perfectly known that interactions between research organizations and enterprises are not so fluid and dynamic as desirable, it turns to be central the role of some specific kinds of intermediary agencies, which can assist regional actors in this process. Actually, innovation is not simply derived from scientific research, but it results from complex interactions between researchers, active in several disciplines, and enterprises. Moreover, different technologies mix each other and it is necessary to be able to face the challenge of this overwhelming process. The prevailing task of a this kind of intermediary organization consists in strengthening the regional innovation players and the relationships among them, in order to help and develop the innovation stream between research institutions and enterprises.

In this paper we present an illustrative example of this kind of intermediary agencies: the Regional Agency for Technology and Innovation (ARTI) of Apulia Region, in Southern Italy. The activities of ARTI fits in the strategy of economic development of the Apulia Region, based on a central role for research and innovation in support of economic growth and social cohesion, and is aimed at promoting, encouraging and meeting the demand for innovation from enterprises and local production systems. In more details, ARTI activities aim at the strengthening of regional players and their relationships; at the development of strategies for technological clusters; and at the dissemination and enhancement of knowledge culture.

2. Concept of Regional Innovation Systems

2.1 Previous literature

During the past 20 years, a renewed interest for models of regional development has flourished not only among regional economists and economic geographers, but also among policy makers. Attention for these themes can be explained by the necessity to operate economic analysis, along with political decisions, referring to innovation models with some emphasis on endogenous aspects and referring to a more concrete interest to regional scale. This reaffirmation was also led by political changes. Indeed, the regional scale is currently considered the most appropriate level at which innovation policies have to be addressed.

In particular, since the beginning of the nineties, the concept of Regional Innovative System (RIS) has become a widely used analytical approach for understanding and explaining the processes and patterns of innovation and has been used as an empirical framework for innovation policy making (de La Mothe and Paquet 1998; Asheim *et al.* 2003).

Although the concept of RIS was firstly introduced by Cooke (1992) and a survey on that theme can be found in a collection of papers published little afterwards (Braczyk *et al.* 1998;

Cooke 1998), research on technological change and regional development dates back at least the middle of seventies (Thomas 1975; Rees 1979).

This concept postulates that innovation is an interactive and geographically-based process, “linked” to the territory, stimulated and influenced by many actors. This notion emphasizes the importance of clusters and geographical proximity and benefits deriving from localization and spatial concentration (Marshall 1919; Bacattini 1979, 1987, 1989). Competitive advantages in the global economy are often, as outlined by Porter (1998), “local” and are derived from concentration in a given region of highly specialised skills and competencies, institutions, productive sectors related to one another and a qualified local demand, along with learning processes and shared social values (Landry *et al.* 2002). Indeed, one advantage in taking a *regional* innovation systems approach consists in considering a multi-level innovation governance and regulatory system, i.e. taking into account at the same time local and global linkages (Cooke 2001). The popularity itself of this approach can be explained by the increasing intensity of international competition on global markets².

Even though a commonly accepted definition of RIS cannot be found in literature, however, summarising, five are the main features characterising a RIS: *region*, i.e., a political, but also historical and cultural, unit, with some legislative powers to support local economic development; *innovation*, generally intended in neo-Schumpeterian term; *network*, conceived as trusty reciprocal relationships among actors sharing the same objectives; *learning*, considered especially at institutional level, whereby new knowledge enters into conventions of firm and innovation supporting institutions, supplanting the old one; *interaction*, i.e., regular formal (or informal) round tables where involved actors can communicate and share their innovation strategies. In this way, chances to learn are created. Consequently, to assess a RIS in its entire systemness, it is necessary to evaluate the nature and extent of systemness along these five axes³.

One of the most relevant features of a RIS is its capacity to create networks among actors. In details, the main actors making up a RIS are companies, the financial system, research and technology transfer institutions, policy makers. The enterprises (both truly innovative ones and innovative ones in traditional sectors) are linked together both by vertical relationships (suppliers-companies-customers) and horizontal ones (joint-ventures, informal cooperation, clustering). The financial system includes both the traditional banking credit system and other forms of access to financial inputs such as venture capital and stock market. Policy makers involved operate at different levels of government: local and regional government, agencies, national and community authorities. Additionally, there is also another group of actors, such as training organizations, universities, research and technology centres, both public and private. Finally, the social context with its intermediate actors (associations, the third sector, economic delegations).

The aggregation, but especially, the interaction among these different actors stimulate cooperative learning processes that, in turn, promote innovation. Relationships facilitate

² The focus on a regional system of innovation should not live down the importance of the relationship between a national system of innovation (Freeman 1987) and the regional innovation systems themselves (Cooke *et al.* 2000) and, especially, international relationships between different RISs.

³ For a survey providing a theoretical examination of dimensions at organizational and institutional level that make a RIS stronger rather than weaker, see Cooke *et al.* (1997).

learning dynamics. It is clear that interactions between actors facilitate assimilation of partners' best practises and innovative thinking.

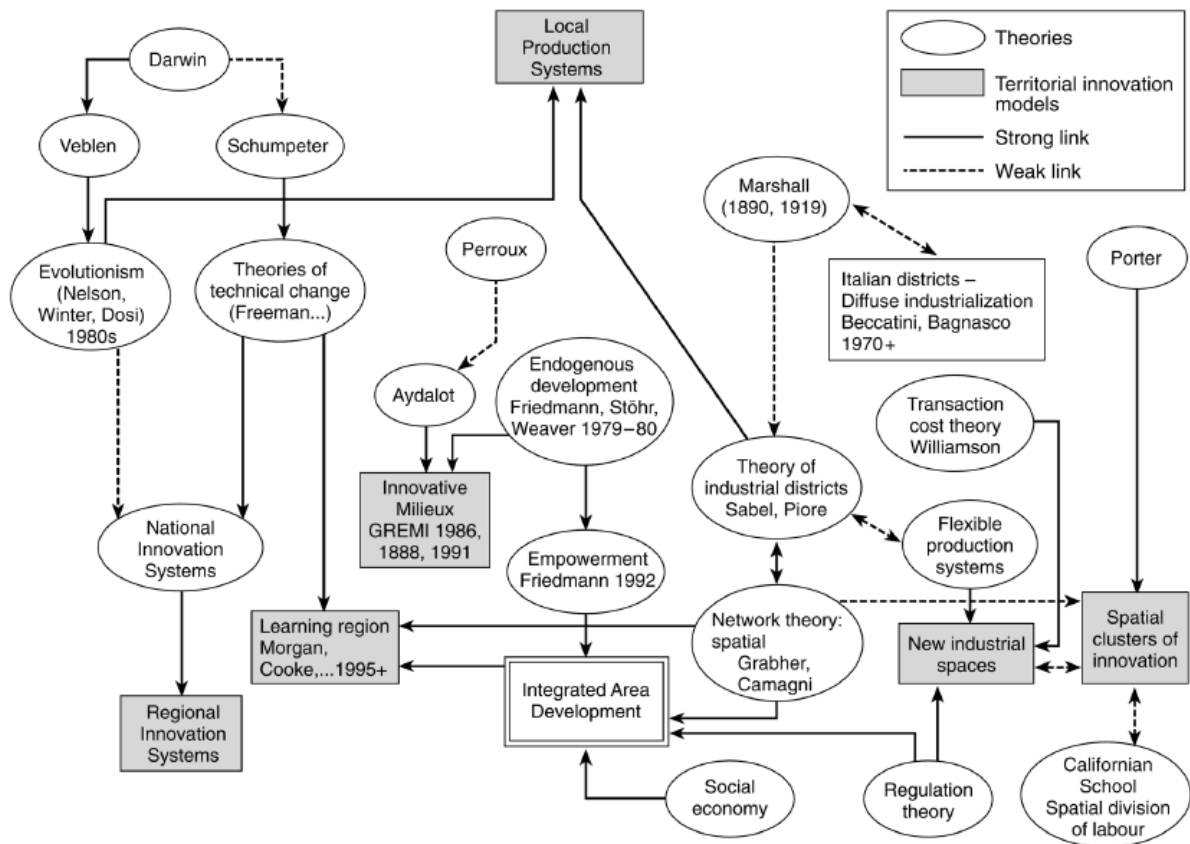
Researchers think that regional innovative performance improves when companies are encouraged to make more innovation thanks to the interaction not only with public institutions but also with other enterprises. In this sense, institutional regional features, their knowledge infrastructure and transfer, as well as individual strategies and companies performance represent the basic conditions and the stimulus to promote innovative activities. In other words, competitive advantages related to an area can be increased if assets are based on such localized resources, skills and supporting organisations closely connected with the territory. This can be explained by the fact that the international competition requires more "not movable" inputs. In this sense, it is important to have disposable a local reservoir from which to draw inputs as necessary.

However, the theoretical framework of RIS is not exempt from criticism and in the last 20 years many other alternative models have been proposed by researchers, theories that suffer as well of some conceptual ambiguity.

One of the most cited shortcoming of this approach rests on its problems of definition and empirical validation, and its not clear determination of what a RIS would actually be, leaving unanswered a series of questions (Markusen 1999). To be honest, some efforts have been made in this direction (Asheim and Isaksen 1997; Cooke *et al.* 1998), but they do not solve completely and definitively the problem. In literature, there are several alternatives to the RIS framework. Among the territorial innovation models, namely, model for regional innovation where local institutional dynamics are characterising features, can be cited: model of *milieu innovateur* (GREMI), of industrial districts (Bagnasco 1977; Becattini 1981), localized production systems, new industrial spaces (Storper and Scott 1988), clusters of innovation (Enright 1994) and so on. For a survey of these models, see figure 1.

Beyond the definitions and definition differences, it is important to underline that these territorial models share many features, such as importance assigned to economies of agglomeration, endogenous growth, innovation, learning, network and governance. What distinguishes RIS from other territorial innovation models proposed in the literature is its stress on the role of institutions, see as behaviour regulators, both inside and outside organizations.

Figure 1 - Territorial innovation models: theoretical roots and challenges



Source: Moulaert and Sekia (2002).

2.2. The role of intermediary agencies

Sometimes, in policy papers, but in studies on regional innovation systems as well, it is asserted that a body of innovative organizations, research supporting institutions, and public administrations operating within one administrative region could be sufficient for the creation of a regional innovation system. Actually, these conditions are not enough.

A collection of agents is not - in itself - a system. We need lasting, well-oriented and innovation-oriented relations, aimed to interchange between involved actors. Moreover, resources making possible the transition from the creative interchange to its implementation and fulfilment are fundamental. More generally, cohesion and a regional *milieu*, with its orientation towards development and innovation, are necessary. If a region or a metropolitan area does not share a development vision, the regional innovation system is just a metaphor not capturing the reality (Cooke 2002). Especially for regions at intermediate level of development, a shared vision is of paramount importance to create a critical mass coordinating and addressing activities toward a common objective.

Currently, regional innovation systems are frameworks where convergence of research and innovation policies are designed. On the one hand, policies supporting local and regional development of cities, industrial sites and regions spend more consciously to support research

and innovation. In the international arena of competition and of growth of new industries at a global level, maintaining a capacity of local development, remuneration of local inputs and contribution to social cohesion and good quality of life requires the strengthening of skills embedded in the areas and systematically aimed at innovation. On the other hand, a growing awareness of the fact that policies supporting research and innovation of companies are more effective if intended to support networks of relationships within which companies themselves are entered is appearing. These networks are often a basis for territorial settling.

Finally, convergence emerges precisely through the presence of adequate fields, objectives, and tools for public intervention, in which, as the approach of regional innovation systems, combine consciously research and innovation policy with territorial policy.

As outlined above, one of the most relevant characteristics of a RIS is the presence of trustful relationships among actors or, in other words, a innovation-oriented social culture. However, as in other economic situations, local development could be prevented by some market failures avoiding the establishment of these kinds of interactions. Just to cite few, we can cite imperfect information, free-rider behaviour, and the presence of high transactional costs and public goods (all along knowledge is considered as a public good in economics).

Actually, in a RIS are involved two categories of actors: one category involved in knowledge exploration and generation (essentially, University and research centres), and one category implicated in knowledge exploitation (mostly enterprises, but also academic spin-offs) (Cooke 2003). For a series of reasons, including market failures above, there could be a gap between the two categories. Left to themselves, these two categories of actors, in the absence of having relationships with one another, could delay the development of the region in which they operate.

At this aim, could be effective the role carried out by some *ad-hoc* created agencies with the responsibility to mediate and transfer knowledge not only from research entities to enterprises, but also among enterprises and a more shared knowledge among all the actors involved in the RIS. These agencies operate as a sort of institutional bridges. Their main contribution consists in reducing distance between actors, helping to define a shared vision and acting as coordinating body.

The establishment of a public nature agency, to whom confer specific functions/activities coordinated, however, by conferring authority, represents a way to implement that process of outsourcing that has assumed a central importance in the context of proposals for modernization, rationalization or, more generally, public administration reform, spread in recent years.

For some time, in Europe (but in other geographical areas as well) there is the tendency to transfer a number of tasks related to development policies outside the government in the strict sense, in structures with a high degree of autonomy and specific objectives. The creation of regional development agencies or innovation agencies is an example of this phenomenon.

These agencies are intermediate bodies between the government and the regional economic and social actors operating in the regional territory. It is possible to state a definition: an institution at regional level, publicly funded, external to the regional or local administration, created to promote the economic development or other specific objectives of the territory on which is required to act.

The agencies are, therefore, an operational and service tool for regional governments, whose usefulness stems mainly from their organizational structure, i.e. from being positioned outside of the bureaucratic regional apparatus, often in a position of semi-autonomy from the regional

government, which allows to limit political interference and, consequently, to adopt a long term perspective in implementing the development strategy.

The definition of regional agency which we have given is deliberately broad, because these bodies differ deeply for organizational models, objectives and functions. The *modus operandi* and the role played by regional agencies varies considerably over time and in different countries. The operational differences reflect a number of factors which include: (i) the political and cultural structure present in each region or country; (ii) the ability of the territories in attracting investment from outside or in widening their economic base; (iii) the presence or not of other institutions and agencies in the region; (iv) functions assigned to the agency. In addition, the operativeness of these structures also reflects the level of support provided by other stakeholders and regional actors, namely the existing regional institutional structure. This is particularly true in areas that already have a structure made up of organisations which have as their purpose the promotion of local development. In such circumstances, the main difficulties experienced by many organizations and, especially, new structures, is to persuade those already in the region to participate in the preparation of regional development strategy and, having agreed, to cooperate in its implementation. The regional agencies do not always receive the support of all stakeholders in the territory and their position and effectiveness can be eroded or weakened as a result of conflicts between different bodies or whether their role is being challenged⁴.

2.2.1. Definition of an “ideal type”

The general purpose for these ad-hoc created agencies is to recover in administrative efficiency, acquiring on the market professional inputs of strategic importance, increasing the service quality, creating virtuous opportunities for partnerships with the private sector. More specifically, between the expected benefits from the establishment of intermediary agencies we can include:

- ✓ cost reduction and quality improvement resulting from (i) a clearer definition of the cost of service; (ii) entrustment to outside professional with a better specialization of the workforce who may be deficient in public administrations;
- ✓ cost certainty through (i) higher quality services at lower cost; (ii) a greater flexibility in management;
- ✓ bureaucratic logic mitigation and public administration streamlining;
- ✓ ability to respond quickly to technological innovation;
- ✓ facilitate quick responses to new needs;
- ✓ facilitate the achievement of scale economies.

In particular, agencies should have:

⁴ The European experience with regard to the agencies is very diverse, in fact, beyond the general objective of growth common to all the experiences of an agency, there are wide differences both in terms of degree of bureaucratic autonomy, in policy tools and strategies adopted, and in the level of specialization. Considering the first criterion, we can observe organisations operating inside or outside of the administrative apparatus, while considering the second, we can make a distinction between “traditional” agencies, using primarily as tools financial facilities, and bodies using softer tools. Still, we have structures that use both types. There are also cases of agencies operating in different fields and others that have a more specific mission.

- ✓ clear and assessable objectives and proportionate budget;
- ✓ a collaborative relationship with other government bodies;
- ✓ a collaborative relationship with policy makers (in solicit and implementing and not making political choices, reclaiming independence in implementation phase);
- ✓ a group of well qualified expertise with extensive use of external expertise;
- ✓ a wide network of relationships with similar subjects in other regions.

For these objectives to be reached, agencies should be recognized as key actors from all those actors involved in the RIS: they should know how to build trust and consensus and how to promote forms of cooperation within the regional system of research and innovation. In the attainment of their goals, agencies should work with medium-long term programming, but with continuous revisions, and proceed with a limited number of interventions and achieve them, avoiding to duplicate European and national policies. They should give institutional continuity in the policies regardless of the politics dynamics and assess and evaluate policies in a continuous process.

To be effective, agencies must (i) start from existing resources; (ii) reward quality and cooperation between public research and enterprises; (iii) create critical mass of expertise and businesses in some areas of technology and market, gradually specializing and bringing the RIS closer to international excellence levels; (iv) assess the actions and policies.

Finally, agencies should be characterised by (i) transparency and clarity about their action and their purpose; (ii) a careful and slender but decisive direction and not by an by high planning and command attitude; (iii) trust and credibility.

2.3. The public policies to reinforce the regional innovation system

Less developed regions cannot compete on costs with newly industrialized countries for goods and products (or on parts of goods and services) which are partially differentiated, produced on large scales and labour intensive. It is necessary to compete on innovation with advanced countries and regions: producing goods and services (or parts of goods and services) which are featured by high differentiation and low labour intensity. At the same time is also essential to generate knowledge-based, creative, innovative products, being able to determine competitive advantages on global niches and on international markets.

Thus, this means to introduce in traditional sectors (food industry, textile, tourism, etc.) increasing innovation contents: ability to modify and to differentiate products, to improve process efficiency, to refine the organisation to use new technological opportunities. At the same time, it is necessary to develop new companies and new productions of innovative goods and services, different from the traditional ones and more technology-based (new ICT services, renewable energy, biotech, etc.), founding this on the stock of skills and competences which feature each region. In other words: strengthen regional innovation systems.

Market mechanisms are not enough to produce these outcomes. Public policies are required to offer to traditional sectors new solutions, opportunities, chances to collaborate with academia and research. Moreover, public policies have to make available to new companies: know-how, high quality human capital, ideas, patents, information and services for new market opportunities.

How the regional innovation system is built and strengthened? First, strengthening single actors (firms, research structures: dimensional growth, internationalisation); second, enabling new actors; third, promoting collaboration between actors (firms-firms; firms-universities); fourth, elaborating long term strategies for each technological cluster; finally, promoting innovation culture.

More in details, the policies to strengthen single actors are the traditional policies for firms and universities focused on: supporting existing firms (incentives and tax allowances for research, incentives for skilled employment, dimensional growth and internationalisation of firms) and public actors (funds for universities and research centres, particularly if based on quality evaluations; incentives for researchers' mobility; educational policies).

The policies for new companies are focused on attraction policies for talented people (researchers and entrepreneurs) and other private actors (labs and high-tech firms), and on the creation of new innovative firms. In particular, the interventions to support the starting of new actors are focused on spin-offs, seed capital and venture capital.

Companies which are *spin off* of public research, being featured by a high technological level, contribute to the development of new technologies and are often the first to use and exploit them (Christensen 1997). In particular, they significantly contribute to the development of the economies in which they work; undertake a key role for economic renewal and technological progress (Bollinger *et al.* 1983; Kirchoff 1994; Paasi 1999). The creation of spin off is a complex process which occurs in restrictive conditions and which require a complementary activity of financial and service brokerage. The availability in the research world to generate entrepreneurial opportunities, in fact, depends on the set (and on the intensity) of support services in developing and funding companies. The services supplied to companies have to be featured by a high relational content: networking between researchers and firms, tutoring, testing infrastructures, and a set of interventions which come with the stage of firms' starting-up (scouting, business plan editing, training for the new entrepreneurs). Moreover, there is the ability of public actors to supply networking activities between capital dealers in every stage of the financial cycle, starting from the pre-seed capital (generally with a public nature) to the seed capital (funding necessary for the experimentation and the arrangement of a business plan) provided by mixed bodies. The number of spin off firms has been substantially increasing in the last decades (Gartner, Shane 1995) and start up clusters operating in high-tech sectors are progressively emerging, with a quick growing process (Saxenian 1994).

The importance of venture capital and innovative finance for innovation processes is a fact in policy reflections. To break the inefficient equilibrium on the market of venture capital it is necessary to operate from different sides, with systemic and coordinated policies. A fundamental part of these policies is the creation of a large venture capital market. This market, that in the international context is called *seed capital*, is placed approximately under the threshold of € 500.000 per investment. Under this level European Union accepts the assumption of market failure, since in every European country no private dealer operates in that range. Given the failure of the market, in the field of the seed capital it is possible to observe a direct involvement of public actors.

Finally, *venture capital* commonly means the investment activities carried out for the creation of start-ups and of investment in the risk capital of small companies with high growth perspectives, with the aim to support and accelerate their development (early stage). Typically new technological firms originate and overcome the first development stages through the

systematic recourse to external capitals, in form of venture capital first and then through regulated markets. Moreover, venture capitalists have the substantial role of managerial and strategic support. This objectives are accomplished through distinguishing organisational and investment structures, which are necessary to face the high risks connected to an investment. Those risks generally come from an high operational risk, more than from a financial one⁵.

Policies promoting public-private cooperation are focused on: public-private joint research projects, public-private labs, technology transfer units, centres of competence.

Another line of intervention can be devoted to elaborate long term strategies for technological clusters. The critical point about the creation of a technological cluster (technological district) is to trigger a process which, starting from the available set of specialised skills, can transform public and private investment flows into endogenous factors, and can enhance the regional attraction of external activities. The technological district can become sustainable as attraction and agglomeration mechanism when it is able to intercept international demand flows (both public and private). Under this point of view, it is relevant the role of the institutional actors. Public policies have to facilitate private investment and/or to be complementary with private investments with a market-conforming approach. The public actor, on one side, has to organise public goods and other forms of non-market coordination, essential for the starting of agglomeration processes. On the other side, it has to operate in a way in which private actors can find, step-by-step, convenience to invest following market rules. The public actor has to create context conditions to make innovation processes faster and less uncertain, in order to let private investment increase. It has to create positive externalities in a dynamic perspective: public intervention helps to create learning and uncertainty reduction processes. Through those, actors can better calculate risks and invest with private funds. Public investments in research, infrastructure creation, supply of real services to firms, vision and culture: all these are areas in which it is possible to use public intervention in the perspective of dynamic externalities.

Finally, public policies should promote innovation culture. The promotion of innovation culture can be achieved highlighting the primary role of educational system in the regional community, rewarding merit, supporting (rather than preventing) change.

3. Apulia: a region at intermediate level of development

Apulia is a region at intermediate level of development, as shown by the data on the number of firms, enterprise birth rate, firm size structure (wide presence of small firms alongside few medium firms), sector specialization⁶.

⁵ Recent contributions (Helmann and Puri 1998; Kortum and Lerner 1998; Kaplan and Stromberg 2000) underline the positive correlations between quantity of financial instruments provided by investment funds specialised in seed investments, start-up, early development, which have as counterpart a wealth constrained agent (entrepreneur), and the growth of the technological innovation rate with reference to a given national system.

⁶ Apulia is eligible for funding under the Convergence objective of the European cohesion policy, that is its gross domestic product per inhabitant is less than 75% of the Community average.

In this section we want, briefly, highlight some weaknesses of the Apulian economy. The main weaknesses are: prevailing specialisation in traditional sectors; large traditional service sector; presence of few multinational firms; low degree of internationalisation.

Table 1 - Export per capita in the less developed regions of Germany, Italy, Spain (thousands of € 2005)

	Germany	Italy	Spain
From 4 to 5	Sachsen	Abruzzo	Galicia
From 3 to 4	Turingen		C.Valenciana
	Sachsen-Anhalt		Castilla y Leon
	<i>Average 3.2</i>		Cantabria
			Murcia
From 2 to 3	Brandenburg	Sardegna	Asturias
			<i>Average 2.5</i>
From 1 to 2	Mecklenburg	<i>Average 1.6</i>	Andalucia
		Molise	Castilla La Mancha
		Basilicata	
		Puglia	
		Sicilia	
		Campania	
Less than 1		Calabria	Canarias
			Extremadura

Source: authors calculation on data DPS-MISE

As it is also shown in the table below, Apulia is featured by a low level of expenditures in research: R&D activities are carried essentially in Universities, although there are niches of excellence in this field. There is, in general, a lack of research outputs' production (patents) and a limited (although growing) degree of cooperation between Universities and firms. Moreover, the technological sectors are featured by limited critical masses, despite of the presence of a large supply of skilled human capital. In substance, Apulia is far from Lisbon objectives (figure 2).

Table 2 - Economic indicators

	Apulia	Italy	EU - 27
GDP <i>per capita</i> - PPS (UE-27=100) – 2004	69.8	107.4	100.0
GDP per employed (UE-27=100) – 2004	99.0	115.7	100.0
Annual GDP growth (%) – average 1995-2004	1.2	1.3	2.3
Employment rate (ages 15-64) (%) – 2005	44.6	57.6	63.3
Female employment rate (ages 15-64) (%) – 2005	26.8	45.3	55.9
R&D expenditures (GDP %) – 2004	0.6	1.1	1.8

Source: authors calculation on data Eurostat

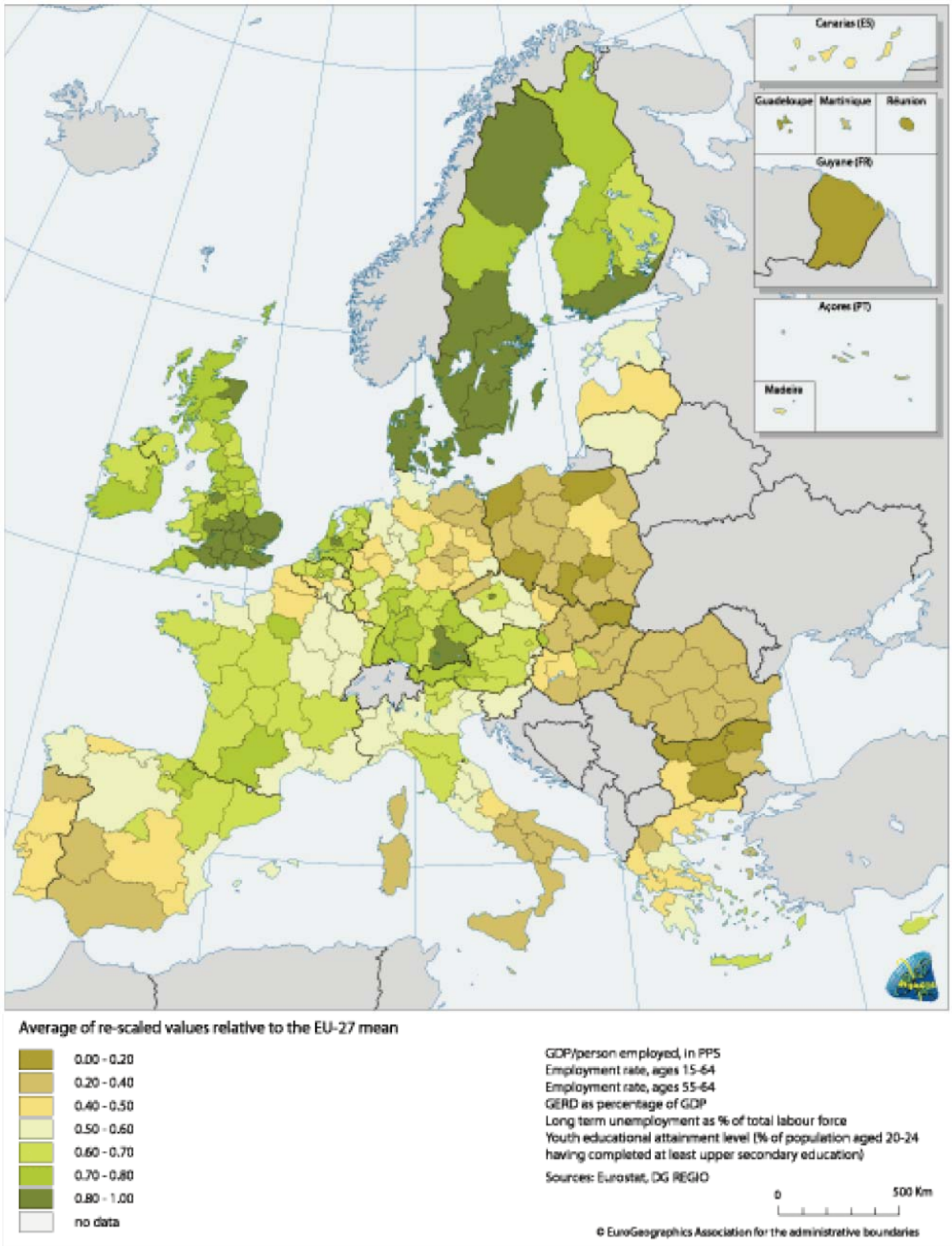
Other features of Apulia economy are: low growth in terms of GDP, productivity and employment (skilled people and females in particular) and emigration of skilled people.

To overcome the recent difficulties, Apulia needs a new development model. The development model which is probably more suitable is featured by (i) bringing innovation in traditional manufacturing systems; (ii) development of hi-tech sectors.

This model is based on strengthening the interactions between demand and supply of innovation and, *de facto*, implies the building and the reinforcing of a regional innovation system: actors and relations which interact in the production, circulation and use of new and economically suitable knowledge.

These radical changes force to an acceleration in the transformation processes related to productive structures. These processes have necessarily to assume firms and markets as their main actors and evaluation standard. However, they require at the same time an intense and intelligent public intervention to support and facilitate transformation processes, make them faster and more flowing. In this context, it turns to be central the role of some specific kinds of intermediary agencies such as a regional innovation agency.

Figure 2 – Lisbon economic indicators, 2004-2005



Source: European Commission (2007)

4. The experience of the Regional Agency for Technology and Innovation

The Regional Agency for Technology and Innovation (ARTI) is a public body created by regional government of Apulia, a region in Southern Italy. Established in 2004, it is fully operational from fall 2005.

ARTI has a slight and little hierarchical structure. The structure is made of a president who is in charge of organizing, planning and addressing the agency policies (he is assisted by an administrative director for the management aspects) and of an internal staff of 14 highly skilled employees. Apart from the administrative and secretary offices, the staff is organised along three broad areas: a section labeled “Analysis and Projects”, composed of a senior economist 1 and three economist at junior level, is more focused on economic analysis and on project management; a section labeled “Communication”, made up of 4 editors, which deals especially with dissemination services; and a section devoted to start up projects, technology transfer businesses and support patenting.

In addition to the internal staff, the Agency has a network of senior consultants working on a project base.

This organizational structure allows the Agency (i) to reduce the costs and, above all, to improve the quality of its action; (ii) to have great flexibility in management; (iii) to mitigate bureaucratic logic; (iv) to be able to respond quickly to new needs.

4.1. The activities of the Regional Agency for Technology and Innovation

The Apulian economic system, like entire Italy, is facing a great transition. From an economy based on traditional productions and small enterprises, sensitive to prices and international competition, to an economy more based on knowledge and innovative products and services, realized from women and men with higher qualification and with more stable job perspectives.

Apulian regional administration is supporting the transition towards this new model of productive specialization. This policy tries, first of all, to strengthen the innovation of the traditional clusters (like agriculture, textile, clothing, furniture, mechanics, construction). To promote the development of high technology clusters (like aeronautics, renewable energy, biotechnologies, mechatronics, nanotechnologies and ICT) is the second goal, to obtain through the valorization of the existing actors and competences.

ARTI is supporting this process with three main action lines:

- ✓ Line 1 - dissemination and enhancement of knowledge culture;
- ✓ Line 2 - strengthening regional players and their relationships;
- ✓ Line 3 - development of strategies for high technological clusters.

Line 1 - Dissemination and enhancement of knowledge culture

This line includes, first of all, the realization of a map of the regional innovation system (RIS), finalized to know and disseminate activities (patents, publications, main projects, etc.) and potential interaction of the Apulian innovation actors. In 2008 ARTI will provide a complete map of regional actors (enterprises, Universities, finance system, public actors) involved in innovative activities, and relevant information on the level, the characteristics and the evolution of innovation in Apulia.

Second, line 1 includes “the knowledge dissemination”, to be implemented through specific actions to promote and disseminate research culture and innovation practices⁷.

Finally, ARTI promotes networking among individuals involved in innovation, through the “Innovation Club” (targeted to regional innovation stakeholders from academia and industry) and the “Talents network” (addressed to Apulian scientists and researchers working abroad).

In particular, “Innovation Club” is a permanent meeting and exchange opportunity among Apulia women and men interested in the promotion and diffusion of the culture and the practice of innovation. The members of the Club are representatives of university, public research institutions, of enterprises, of professional associations and of the public administration. The objective is to create knowledge and confidence among the members; to stimulate the creation of common languages and the openness to dialogue and interactions; to create occasions for thematic discussions; to facilitate the circulation of information; to incentive common initiatives.

The “Talents network” has instead the objective of detect Apulian scientists, researchers, academicians and managers living and working outside the region and to set up a network both among them and with their land of origin. Under this initiative, the following activities are carried out: creation and steady updating of a database of Apulian talents; promotion and facilitation of exchanges of experiences, knowledge and expertise; connections among all the ARTI activities.

Line 2 - Strengthening regional players and their relationships

ARTI promotes the integration of the regional system of innovation, facilitating the exchange of knowledge and human resources between industry and academia and fostering the transfer of the research results to the market.

In this framework, firstly ARTI manages the “Industrial Liaison Offices” (ILO) regional network. To promote the valorisation of the structures, the competences and the result of the University and the research centres is the objective of ILO project. In concrete terms, ILO project include activities addressed to:

- create Industrial Liaison Offices in the five Apulian Universities and to guarantee the effectiveness and the economic sustainability of those offices;
- equip these offices with commercial and operating instruments in order to realize operations of technological transfer from the academia towards the market;
- encourage the birth of new spin-off enterprises and to support the growth of spin-offs of recent constitution;
- favour the international extension of Apulian Universities’ patents.

This line of action includes also the promotion of initiatives aimed at supporting regional enterprises, Universities, research centres and other bodies in the participation in R&D projects financed by regional, national and community instruments. A specific ARTI engagement is finalized to increasing the participation of Apulian actors in the 7^o Framework Programme and the other EU programs, thought a projects pre-evaluation service, formative activities and theme meetings.

⁷ A specific attention is orientated to young people and schools, involved in various activities and events. In addition, in December 2008, it will be organized the “Innovation Festival”; in this event, the concrete realization of innovative projects and the research ability of Apulian actors will be presented to the large public.

Line 3 - Development of strategies for high technological clusters

ARTI activities connected to technological clusters promotion count 4 phases:

1. the analysis of regional demand and supply for research/innovation, the study of the innovation actors and their interactions, the monitoring of economic policies and research initiatives effects;
2. the construction of long term scenarios;
3. the support to the most effective interactions between the innovation demand and supply, especially by means of pre-feasibility and feasibility studies concerning technological districts and enterprise networks⁸;
4. ARTI's results evaluation and strategy correction.

As we wrote, the efforts are addressed on those value-added sectors in which Apulia owns some scientific or technological expertise and that can represent good opportunities for future development. Until now, the clusters on which the ARTI commitment has been concentrated are: mechatronics, aerospace, renewables energies, agro-food, multimedia contents. For all these clusters, ARTI is carrying out a project to analyse innovative activities implemented by regional actors (Universities, SMEs, research entities, etc.). The aim of these studies is to support policy programming, to enhance knowledge and information circulation among the regional stakeholders and to promote the set-up of specific initiatives and projects. The results of these analyses are disseminated through the ARTI website, informative books and public workshops.

4.1.1. Some initial results

Regarding specifically mechatronics, the objective of regional policy is to make Apulia a national leader in the development of mechatronics science-based products. For this purpose, in the period 2006-2007, ARTI has supported the constitution of a technological district, thought several activities. In the first half of 2007 the Apulian Mechatronics Technological District was born; it has among the promoters big industrial groups (Bosch, Getrag, Fiat), some local SMEs, the Polytechnic of Bari and the University of Bari. In the next years, for the firms the technological district will mean: privileged access to high qualified human resources, support to the technological innovation developed in the district, privileged access to high quality infrastructures.

Regarding the agro-food cluster, ARTI is sustaining the existing district activities, its promotion among local enterprises, the realization and the updating of a database with Apulian sector competences and services. The overall goal of the regional agro-food district and ARTI is that of sustaining innovative and high quality food products.

Regarding renewables energies and energy saving, a part of two analysis studies and numerous workshop, ARTI has launched a project aimed at selecting a set of technology options that are coherent with the national and European policies and that are capable of generating significant impacts on the regional economy and research infrastructures. In particular, ARTI is realizing two pre-feasibility studies on a "second generation bio-refinery" and a "solar cooling system" for local hospitals. Finally, in 2008, to promote the eco-friendly

⁸ In the case of the mechatronics sector, ARTI has contributed to the constitution of the regional technological district.

re-generation of the regional building heritage, ARTI, in agreement with the Apulia Region, has launched two projects on the energy topic: an international competition of ideas for the integration of the active and passive solar systems in the recovery of buildings and residential areas of Apulia; a pre-feasibility study on energy requalification and photovoltaic panels integration of the Bari University's buildings.

In the next years, these pre-feasibility studies could provide an useful contribution to the adoption of the Interregional Operating Program on renewable energies and energy efficiency, that will be coordinated by Apulia Region (as management authority)⁹.

5. Conclusions

In this paper we tried to answer to the following question: "Do we really need a regional innovation agency?". We think that the answer is: "Yes, we do".

The new international scenario brings to challenges which are harder than those in the past, in particular for regions at intermediate level of development. To cope with the growing competitive pressure these regions need a new development model: innovation represents the route to increase competitiveness. Innovative capacity is a complex phenomenon. It involves several actors and institutions. It is the result of human intelligence, of application and accident, of resources that in several modes are assigned to research. Innovation is an interactive process "linked" to the territory, stimulated and influenced by many actors.

For these reasons market mechanisms are not enough to produce a change in the development model of a region. Public policies are required to support and facilitate transformation processes, make them faster and more flowing. In this context, it turns to be central the role of some specific kinds of intermediary agencies such as a regional innovation agency. These agencies operate as a sort of institutional bridges. Their main contribution consists in reducing distance between actors, helping to define a shared vision and acting as coordinating body. The establishment of a public nature agency, to whom confer specific functions/activities coordinated, however, by conferring authority, represents a way to implement that process of outsourcing that has assumed a central importance in the context of proposals for modernization and rationalization the public administration.

In our opinion, the experience of the Regional Agency for Technology and Innovation represents an interesting case which demonstrates the importance and the usefulness of this kind of intermediary agencies.

⁹ The 2007-2013 programming period of the European Structural Funds includes the definition of an Interregional Operating Program on renewables energies and energy efficiency.

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