**From being smart to becoming wise: how capable are innovation policies to foster a knowledge driven strategy that promote growth? The case of cluster policies in the Piedmont Region.**

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ABSTRACT

The economic and financial crisis that hit the world economy in 2008, has led Europe to question itself on the redefinition of the role of companies and their positioning within the economic ecosystem in relation to restarting economies.

Amongst the innumerable economic policy tools to promote economic development and to foster growth, the majority of current Cluster policies in European countries have targeted emerging industries and emerging technologies. This is especially the case when those policies are strongly related to innovation and R&D support, as well as to Smart Specialization Strategies (S3). Accordingly, the most important measures for clusters support refer to the engagement of SMEs, research and development, and internationalization. It is important to note that interventions may have an effect on economics which are not easy to measure. In fact, according to the "*regional innovation paradox*" (Solow, 1987; Gordon, 2000) innovation does not translate automatically and everywhere in better economic performance, posing a problem of a reliable performance's evaluation. Moreover, quantitative attempts to measure the impact of innovation may be made difficult by the well-known problems of defining innovation, and the obvious pitfalls of using R&D expenditure as a proxy (Boschma and Frenken, 2006).

The final scope of this paper is to outline a number of reasons for which a comprehensive approach on cluster evaluation is needed and therefore to elaborate a number of possible strategies to define it. This paper highlights the development of the cluster strategy in Piedmont Region as a case study.

## 1. Introduction

Fundamental to the scope of this paper is to ascertain a degree of consensus around what is meant by innovation and its anchoring within the sphere of industrial policy.

Innovation means the introduction of new systems, recognised systems and methods of production, capable of transforming, modifying or rejuvenating a political, social or economic order (Fagerberg, Mowery and Nelson, 2011).

Nowadays, the assumption that innovation is a driver of economic progress has mainly been understood in conjunction with the advent of ICT and globalization. Despite its current significance the neoclassical economics neglected the importance of innovation for economic progress for more than half century; in order for this paradigm to find its own space within economic models, one had to wait for the advent of the neoclassical revolution. One of the pioneers of this theory is considered Shumpeter (1934), who focused his studies on economic innovation.

The following years has seen new theories advanced, such as that of the "*neutral technological change*" elaborated by Solow (1956), according to which there is an indissoluble link between technological change and improvement of labour productivity. Generally referring to this link, economists and politicians nowadays agree, in recognizing a crucial role for innovation, especially of a technological nature, in stimulating productive activity. The innovation policies have taken central stage among policy makers in the European Union and SMEs are regarded as the engine of growth of the European Union (European Commission 2013). Innovation represents a crucial challenge for SMEs which very often lack internal financial, human and organizational resources and competencies to develop new products and services. As stated elsewhere, it appears clear that SMEs suffer the "*liability of smallness*" (Santoro, et al. 2016) and that one possible way to address this challenge is to exploit external sources of knowledge: evidences of relying on external sources of knowledge and networking to innovate for SMEs are largely reported (Hoffman et al. 1998; Ussman et al. 2001).

Moreover, as underlined by the Innovation Strategy (OECD 2010), companies increasingly acquire the knowledge they need to innovate from the outside, using different forms of partnerships ranging from alliances and joint ventures with external partners to acquisitions through contracts for R&D and patents. The capacity of the firm to develop an internal knowledge base and to exploit external knowledge acquired and combined in order to innovate is crucial to understand the innovation process, especially in the constitution of the firm's "knowledge capital" (Laperche, 2007).

The innovative process is therefore a *collective process* that requires the collaboration of different agents, and the combination of scientific and technical potential enriched constantly with high-skilled human resources and also with technological, organizational, financial, relational and commercial competencies.

Collaboration is an increasing important feature of all the innovative activities (Crescenzi, Nathan and Rodriguez 2016) and the S3 has created the condition of the development of policies aimed at reinforcing the collaborative dimension of innovation policies.

The priority setting of the S3 is founded on the 'entrepreneurial discovery' where entrepreneurs, together with administrators and stakeholders are suited to identify best domains for future priorities.

A network of this type is empowered by the information provided by agents such as Universities, research centres and labs that may concern both the scientific and technological aspects. They should have the capabilities of increasing the efficiency of R&D application, the equipment, as well as the skills of the human capital employed, the network of scientific and technological functions that facilitate the dissemination of new knowledge (Mowery and Sampat 2011).

Government capacity has also an impact on innovation and economic performance, the quality of local or regional governments mitigates or enhances the effects of public investments. Both regional expenditure on cohesion and quality of government make a difference for regional economic growth; and that the greater the level of expenditure and the better the quality of the local government, the higher the economic returns of public expenditures on cohesion (Rodriguez-Pose and Garcilazo, 2012).

One of the economic policy tools that seemed capable of transitioning the economy towards innovation, was identified in the "Cluster Organizations", which appeared for the first time in the European industrial scenario in the 1980s in France, where it had followed a national development. In Italy instead, they followed a regional implementation path, as part of an EU Structural Funds Programme (e.g. Erdf Operational Programme). This had two main objectives, namely to represent the knowledge intermediaries able to facilitate the creation of local networks on one side and being suppliers and service provider on the other. Along this path, the Piedmont Region, in 2009, established 12 cluster organizations (Poli di Innovazione) related to different technology domains, subsequently oriented by Smart Specialization Strategy (Foray et al, 2012) in the 2014-2020 programming, which promoted a re-organization in 7 Clusters. These Cluster Organisations, who's role consists in aggregating small and large firms, universities, research centres, scientific parks, industrial associations, according to the systemic innovation model of the Triple Helix (EOCI, 2018).

The question has to be asked how ready is Piedmont Region to implement an innovation-led strategy, utilizing funding sources to tackle the challenge to improve the economic performance and enhancing growth? Is the link between policy intervention and absorptive capacity working well in the catching up context? At a first glance, a comparison of empirical evidence from different versions of the European Regional Innovation Scoreboard (ERIS) (Hollanders et al., 2009), with data from the official statistical service of the European Union (Eurostat), reveals an intriguingly anomaly. In particular, it reveals that Piedmont region—which have been ranked as *Moderator Plus* in the last version of the regional innovation scoreboard (2018, RIS) —has grown following a slightly divergent path than other *Moderate Plus* regions under consideration.

While scoring above average rates in terms of patents, number of publications and employment MHT manufacturing & knowledge-intensive services, the capabilities of investments in some of the most promising directions are as yet limited.

The observation that constitutes the core of the analysis that is hereby presented can also be seen in relation to the so called "regional innovation paradox" (Oughton, 2002), which has – more in general - been described as the inability of lagging regions in Europe to absorb public funding effectively for the promotion of innovation in an increasingly globalized world. Such an observation constitutes a relevant insight which might help scholars working in the innovation field, to clarify if the existence of such a paradox which could be an outcome of methodological inaccuracies, such as "*innovation measurement issues*" (Fragkandreas, 2013) or if it is a product of real economic processes. If the latter is the case, tackling the extent and the form of the local declination of the paradox might help policy makers to unveil the specific fragility of the productive ecosystem considered and to catch the missing link between policy intervention and the region absorptive capacity.

Nonetheless, methodological issues should be taken into account in both cases: evaluating new innovation policies comprehensively and their real effects, outcomes and impact on regional economy requires innovative evaluation models and the ability to effectively tackle the creation of knowledge, learning and capacity building, that is the so called *"intangible factors".*

In the following paragraphs an outline of the region taken into analysis is presented.

## 2. Overview of the Piedmont Region

Piedmont is located in the north-west of Italy, it is the second largest region in Italy and the total population account for around 7% of the Italian population (2016). In terms of Gross Domestic Product Piedmont is the fifth region in Italy and the per capita income is higher than the Italian average. Historically Piedmont has been the engine of industrial and economic fabric in Italy.

However, the region has gone through a long economic recession started in 2008 characterized by a first deep in 2009 followed by a small recovery, then a second recession in 2014 and after then a positive growth although not strong.

The manufacture of metal products, machinery and equipment are the leading sectors in the Piedmont economy.

The region has a larger share of medium-size and large companies than the national average. The share of large enterprises has reduced in the past four decades, due to an

increase in the number of micro-sized firms, but also unlike the rest of Italy, to a reduction in the absolute number of larger enterprises.

Piemdont has been subject to deindustrialization, technological change and globalization, the productive system has shifted from the large enterprises to a more varied productive structure where SMEs play a major role and the service sectors are gaining more and more importance. Therefore, the traditional industrial model has gone through profound changes, moreover it has to be of great concern that the changes has induced SMEs to focus on low value- added activities which result in slim possibilities for internationalization, diversification and product upgrading. Despite that, positive trends have been registered to the sectors linked to Industry 4.0. Since 2016 some positive trends have been observed.

The SMEs able to change and adapt to the decline, shifting from the traditional industrial model (based on a one to one relationship with few large manufacturers) to respond to economic crisis via taking on board new technologies in production processes.However it has to be stressed that the potential offered by the new technologies seem still not valued fully. Having said that, the Piedmont industrial system can rely on key factors for a vibrant enabling framework.

The region hosts one of the best Italian universities (third in Italy and within the first 300 in the world according to the ARWU Shangai ranking), moreover it can boast research centres of high quality research capabilities in leading technological fields, level of business expenditure in R&D above the Italian and European average, good infrastructure endowment and accesibility, GDP per capita above EU average.

The regional innovation ecosystem includes the regional cluster organisation (Poli di innovazione) a number of various science and technology parks and accelerators. Piedmont, according to the European Cluster Observatory, is characterized by a high concentration of well- performing clusters and the regional economy is well diversified.

Piedmont has important agglomerations of activities not only in traditionally defined sectors, but also in a number of cross-sectoral industries that are emerging across Europe. As it is stated by the last European Panorama Report (2016) interlinkages and collaboration between clusters offer a fertile ground for fostering industry transformation and the development of emerging industries.

Overall, Piedmont’s clusters in the ten emerging industries received 15 performance stars in 2014, which is above the EU average of 8 stars per region. This means the good regional potential for cluster development in the cross-sectoral emerging industries.

However, despite the good performance due also to the high number of employees and the geographical proximity of firms operating in the same sector or closely related sectors, the collaboration between firms is generally limited.

## 2.1 The organization of "Poli di Innovazione" in Piedmont and the challenge the region has to face.

The Piedmont region in 2009 has established 12 cluster organizations, also called "Poli di Innovazione". They were related to different sectors, both in high tech and traditional domains. Their goal was to create an effective regional infrastructure for supporting research and innovation, industrial transition and modernization aggregating large and small firms, universities, research centres, scientific parks, industrial associations, according to the innovation model of the Triple Helix[1].

The Poli di Innovazione are created within the regional framework for supporting the implementation of regional development policy in order to strengthening the regional and innovation ecosystem and facilitating the transfer of technology.

In 2015 the Poli di Innovazione were restructured and aggregated in a way to enhance the regional priorities outlined in the regional *Smart Specialization Strategy* and became one of the main delivery tools for implementing such strategy: their localization matches the areas that have the largest concentration of firms operating in a specific industrial sector.

Whilst some of the clusters have a focus on a traditional industrial sector (i.e. textile or agri-food) others are cross-sectoral covering key enabling technologies of emerging industries. However, it is important to notice that cross-sectoral collaboration is identified also with traditional industrial sectors.

Cross-sectoral collaborations are defined as a strategy for upgrading production processes and products to avoid being overtaken by other competitors in the global market. This can be done thanks to a variety of services that the cluster organization is able to provide in order to foster the innovation potential of companies.

Piedmont needs to complete its transition towards smart manufacturing and resource efficiency. The region needs also to modernize its industry.

[1] https://ec.europa.eu/regional_policy/en/projects/best-practices/2689

The global megatrends represent either opportunities or threats for the regional economy. This depends on the capability of the regional entrepreneurial ecosystem to influence the development of technologies, products or services or if it simply affected by those changes.

The member companies that operates within the regional cluster organizations perceive the current megatrends as opportunities for product and process innovation which allow companies to remain competitive in the international arena.

One of the greatest goals pursued by the "Poli di Innovazione" especially with regard to innovative SMEs is the creation of effective network.

Companies members of "Poli di Innovazione" are, generally speaking well aware of the new technological developments but especially SMEs seem not ready yet to take full advantage of these opportunities. The awareness of the megatrends and the upcoming technological changes seem lower in firms not included in the "Poli di Innovazione" networks.

## 3. The innovation performance: inputs

From the technology dynamics point of view, Piedmont is a mature region that holds the leadership in Italy in terms of R&D expenditure in relation to GDP which is 2.21% (2016), slightly higher than the previous year (2,15% in 2015), and it represents the highest share compared to the average of the other regions of the North West of Italy (1.52%) and of the north in general (1.54%)[2].

From another source, the Regional Innovation Scoreboard includes three different grades for each class of innovators (leaders, strong, moderate, modest) and Piedmont is classified as an Innovative Moderate "plus", slightly up 0.6% compared to 2011 indicators. The leadership in R&D expenditure-business sector is highlighted: Piedmont region invest above average compared with the average values of both the totality of the regions classified as Moderate Plus and the Italian Regions which belong to the same category.

[2] Istat

| | Country | R&D expenditure - public sector | R&D expenditure - business sector | Non R&D innovation expenditures |
|---|---|---|---|---|
| **Piemonte** | **Italy** | **0,404** | **0,691** | **0,584** |
| Valle d'Aosta | Italy | 0,181 | 0,316 | 0,374 |
| Liguria | Italy | 0,532 | 0,486 | 0,453 |
| Lombardia | Italy | 0,328 | 0,495 | 0,481 |
| Provincia autonoma Bolzano | Italy | 0,214 | 0,320 | 0,564 |
| Provincia autonoma Trento | Italy | 0,680 | 0,378 | 0,599 |
| Veneto | Italy | 0,397 | 0,478 | 0,569 |
| Friuli V.G. | Italy | 0,580 | 0,463 | 0,764 |
| **Media Moderate + ITA** | **Moderate + Regions in Italy** | **0,416** | **0,419** | **0,543** |
| **Media Moderate + TOT** | **All Moderate + Regions** | **0,454** | **0,412** | **0,541** |

Font: Eurostat

We also compared Piedmont Region expenditures with those allocated by other selected Regions, benchmarking regional structure and identifying regions that share similar structural conditions which are relevant for innovation-driven development (social, economic, technological, institutional and geographical characteristics) with the help of an interactive tool that allows to identify reference regions across Europe based on a methodology developed jointly by Orkestra – Basque Institute of Competitivenes and the S3 Platform.

| | Country | R&D expenditure - public sector | R&D expenditure - business sector | Non R&D innovation expenditures |
|---|---|---|---|---|
| **Piedmont** | **Italy** | 0,403 | 0,691 | 0,584 |
| Media Moderate + | Moderate + | 0,454 | 0,412 | 0,541 |
| Cataluna | Spain | 0,532 | 0,457 | 0,291 |
| Pais Vasco | Spain | 0,458 | 0,612 | 0,335 |
| Aragon | Spain | 0,434 | 0,332 | 0,267 |
| Provences-Alpes-Cotes-d'Azur | France | 0,692 | 0,635 | 0,487 |
| Sudosterreich | Austria | 0,705 | 1,000 | 0,701 |
| **Media Neares Region** | Nearest Region | 0,564 | 0,607 | 0,416 |

Source: Eurostat

## 4. **The innovation performance: outputs**

When coming to the other side of the description of the innovation panorama, the first and simplest indicator commonly adopted is the number of patents obtained. The importance of these indicators relies in the linkage between research and market access that patent

grants to the firm. Particularly relevant is the number of patents originating and deposited from the Piedmont Region as shown in the table below.

The table below shows the normalized scores for the selected indicators and relative results compared to the average of all the European regions classified as "Moderate Plus", of which we also highlight the results only for the Italian regions included in the same classification. The values shown in the table highlight the relative strengths and weaknesses: among these, the SMEs that innovate internally - *in-house* and the intensity of Piedmontese patent applications are above the "Moderate + total" average. On the weaker side, the value relative to "SMEs that collaborate with others" is well below the "Moderate + total" average, although in line with the Italian average of the moderate regions + (Moderate Plus ITA = 0.165), revealing a dynamic which is rooted in the national ecosystem as well.

| | Population with tertiary education | Lifelong learning | Scientific co-publications | Product or process innovators | Marketing or organisational innovators | SMEs innovating in-house | Innovative SMEs collaborating with others | PCT patent applications | Employment MHT manufacturing & knowledge-intensive services |
|---|---|---|---|---|---|---|---|---|---|
| Piemonte | 0,217 | 0,221 | 0,468 | 0,618 | 0,460 | 0,673 | 0,166 | 0,369 | 0,677 |
| Valle d'Aosta/Vallée d'Aoste | 0,196 | 0,230 | 0,283 | 0,369 | 0,296 | 0,387 | 0,136 | 0,275 | -- |
| Liguria | 0,169 | 0,263 | 0,604 | 0,432 | 0,516 | 0,450 | 0,099 | 0,279 | 0,505 |
| Lombardia | 0,348 | 0,245 | 0,535 | 0,636 | 0,573 | 0,670 | 0,235 | 0,350 | 0,738 |
| Provincia Autonoma Bolzano/Bo | 0,185 | 0,288 | 0,437 | 0,540 | 0,526 | 0,512 | 0,146 | 0,195 | 0,231 |
| Provincia Autonoma Trento | 0,347 | 0,327 | 0,852 | 0,566 | 0,506 | 0,580 | 0,131 | 0,264 | 0,370 |
| Veneto | 0,239 | 0,257 | 0,516 | 0,648 | 0,539 | 0,656 | 0,161 | 0,370 | 0,526 |
| Friuli | 0,259 | 0,300 | 0,781 | 0,661 | 0,553 | 0,693 | 0,248 | 0,432 | 0,517 |
| Media Moderate + Ita | 0,249 | 0,273 | 0,573 | 0,550 | 0,501 | 0,564 | 0,165 | 0,309 | 0,481 |
| Media Moderate + TOTAL | 0,363 | 0,378 | | 0,471 | 0,502 | 0,463 | 0,299 | 0,298 | 0,352 |

Source: Eurostat

The population with Tertiary Education is well below the average “Moderate plus” European countries as well as the share of scientists and engineers. Moreover, the majority of graduates from the Turin Polythecnic leave the region after graduation.

These indicators shed some light on the regional industrial ecosystem; its propensity of attracting young and talented people seem extremely fragile and still needs to be developed to express its full potential. The region has a high level of young unemployed which is due to a mismatch of the labour market needs and the education system. Another dissonant output deals with “average youth unemployment rate” which in Piedmont Region is higher compared with the two groups of European regions considered. Fragkandreas (2013) notes, it is important to mention the existence of a few similar observations such as the publications that have, since the late 1990s, dealt with the so-called Swedish paradox (see, e.g. Bitard et al., 2008; Edquist & McKelvey, 1998; Ejermo & Kander, 2009; Ejermo et al., 2011).

Part of the overall conundrum refers to the observation that high rates of investment inputs in terms of innovation such as research and development (R&D) generate weak innovation outputs such as innovative products, growth and employment. Similarly, several scholars argue for the existence of a European paradox, i.e. the inability of the European Union to

translate outstanding scientific research results into innovation and international competitive advantage (see, e.g. Conti & Gaule, 2011; Dosi et al., 2006; European Commission, 1995; Tijssen & van Wijk, 1999).

Another insights from the output side comes from the entrepreneurial discovery that guided the elaboration of the S3 formulated by the European Regions. The data reported by the analysis of Caramis and Lucianetti (2017) which focused on the analysis of the Italian documents for S3. At the programmatic level, smart specialization is recognized as one of the guiding principles of development within the Innovation Union initiative, which is an integral part of the Europe 2020 strategy of the European Commission. The authors (Caramis & Lucianetti, 2017) report how, in general, the full implementation of entrepreneurial discovery aimed at developing smart territorial specialization is currently not fully implemented and is often far from Foray's theoretical formulation (2015). When ranked "1", the Regions tends to select priorities in a fairly isolated way, relying on general criteria elaborated within the administration. On the contrary, at the opposite the value "4": it is undoubtedly the model in which the stakeholders play a leading role in selecting the areas of specialization and the priorities together with the Region. As shown below, Piedmont Region scored "3".

In general, the Region selects the specializations on its own and submits them to a wide and articulated consultation. The actors that participate most strongly are the "strong" actors of R&I (research centers, universities, innovation companies), often organized in networks. Therefore, the entrepreneurial discovery for Piedmont Region seems overall still incomplete.

| | **Kind of entrepreneurial discovery** |
|---|---|
| **Piemonte** | **3** |
| **Valle d'Aosta** | **2** |
| **Lombardia** | **4** |
| **Trentino Alto Adige** | **4** |
| **Veneto** | **4** |
| **Friuli Venezia Giulia** | **4** |
| **Liguria** | **-** |
| **Emilia Romagna** | **3** |
| **Toscana** | **3** |
| **Umbria** | **3** |
| **Marche** | **3** |
| **Lazio** | **2** |
| **Abruzzo** | **2** |
| **Molise** | **1** |

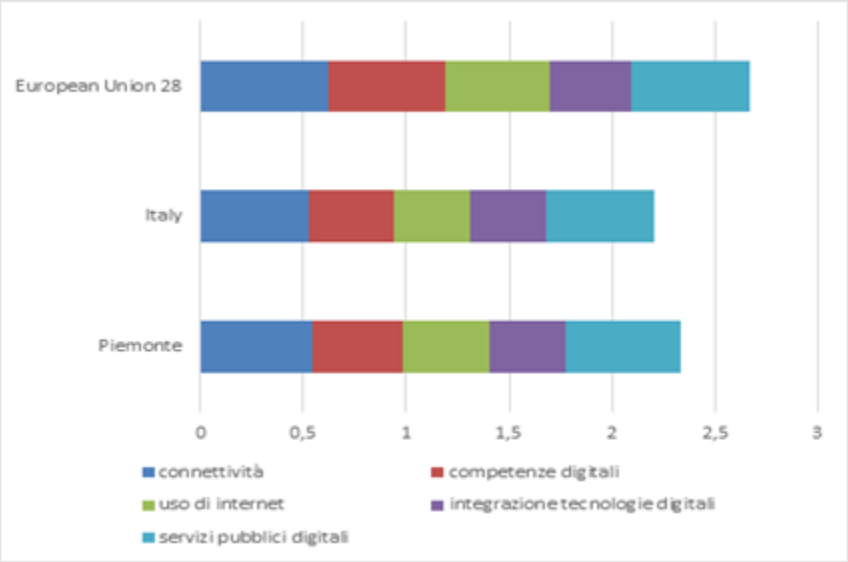
| | |
|---|---|
| **Campania** | **2** |
| **Puglia** | **2** |
| **Basilicata** | **-** |
| **Calabria** | **1** |
| **Sicilia** | **2** |
| **Sardegna** | **1** |

Source: Caramis Lucianetti 2017

The entreprenueurial system seems more geared up to respond to precise demand rather than anticipate new market trends.

The propensity to collaborate and to work in joint collaborative projects is also extremely limited. As a consequence, the cluster organization within the Region gather a minor share of the firms operating in the region. This is particularly striking in the sector of mechatronics, ICT and agri-food clusters where firms associated to the cluster are just 4-10% of the regional potential.

According to the Digital Economy and Society Index (DESI Index) Piedmont is above the average Italian DESI Index but still distant from the European level, therefore the major challenge is represented by the lack of digital skills.




Source: Ires Piemonte

This weaker absorbity capacity reflects, as stated in the above paragraph, a mix of factors including the post-industrial structure of the ecosystem and the existence of low added-valued activities in the regional economy.

## 5. CONCLUSIONS

This paper has the aim of outlining the state of the art of innovation and technology of the Piedmont region compared with other European regions with similar outlook.

Secondly a policy action undertaken by the local government in the recent past to foster growth through innovation has been presented. From the first evidence gathered it is clear that the impact of R&D expenditure is modest on the economic system of the region.

The quality of the education system, the capacity to retain the well trained workforce and a sound finance system (venture capital) seem vital in order to generate positive impacts on the economy.

The collaborative dimension among SMEs should be highly supported. The technological picture of Piedmont presented in this work indicates a primary role in Italy but underperforming when compared with the EU average.

Local policy makers should bear all the factors highlighted in this paper mind in order for SME's to take advantage of innovation. Only a small percentage of Piedmontese companies that are global players they take full advantage of global trends. However, the majority of SMEs are not even fully aware of the opportunities that megatrends could trigger. They still rely on anachronistic business models, lack of collaboration, evidence that the creation of innovative networks is symptomatic of a fragile business system.

Notwithstanding the good performance for some input factors (R&D expenditure) and for some output factors (patents and employment MHT) the data stemming from the economic reality is quite clear: just a small percentage of piedmontese companies that are global players take full advantage of global trends while the majority of SMEs find difficult to be part of an innovation framework.

In order to understand the reasons behind the lag in implementing appropriate policy measures to support innovation various elements have to be taken into consideration.

First of all, the measures dedicated to innovation that have been adopted in the recent decades have been hindered by the global downturn of economic activities in the manufacturing sector in Europe. They have been brought into place because of the insufficient levels of innovation and to make companies more competitive with South-East Asian countries. Therefore, innovation policies have been adopted during the restructuring process.

The transition from a traditional industrial economy into a more service based economy has hit heavily the traditional manufactural sector of SMEs, which still represent the backbone of Piedmont economy. These SMEs have been suffered greatly from globalization and are in a weak position when coping with innovation from multinational firms. However, the analysis undertaken with this work seem to suggest that SMEs active in high tech sectors are those more likely to benefit from the EU measures to support innovation activities.

Those findings provide some initial evidence based insights to inform and reinforce the debate about innovation policies approach and its future post 2020 within the informative boundaries imposed by specific methodology and by the programme evaluation approach.

The action undertaken by the regional government to create and implement the "Poli di Innovazione" therefore is an important intervention in order to foster innovation and promoting the aggregation of smaller firms.

Finally, in order to overcome the issues related to the 'innovation paradox' it is advisable to increase the regional innovation capacity. This includes the 'upgrading' the role of Poli di Innovazione to strenghten their strategic management capacity (notably a shift from direct financial aid to demand side policies).

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Moreover, it must be noted that since the first periods of their establishment, there has been an increase in the percentage of innovative companies that fluctuates from 31.5% to 35.5%, in the period from 2010 to 2012, before moving to 45.5% in the following three years. The same cannot be said for the percentage share of expenditure for research and development which is around 1.26% of GDP for the year 2012 compared to the 3% percentage foreseen by the European Union for the States membership (Dell'Atti, 2019).