

Department of Economics and Finance

Chair of European Economic History and Politics

**THE EFFECTIVENESS OF EUROPEAN INDUSTRIAL POLICIES:
REGIONAL DIVERSITY, POLICY REFORMS AND KNOWLEDGE-LED GROWTH.**

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ACADEMIC YEAR

2013/2014

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Abstract:

This paper investigates the efficacy and effectiveness of the recently advanced Industrial Policy for Europe within the framework of the EU 2020 Strategy. A particular focus will be placed in assessing the capacity of EU Member States to comply with the targets predetermined in the above-mentioned document. This evaluation will emphasize the need to account for national and regional diversities in the process of policy development. Accordingly, drawing from a consistent body of literature, the study will suggest the adoption of a 'place-based' approach to regional policy design. Contextually, the focus will shift on the necessity to take stock of regional diversities, in the form of regional embedded knowledge, in order to foster the creation of learning economies. A paradigmatic characterization of different Regional Innovation Systems (RIS) will follow, through which we will try to frame the dynamic of knowledge-led growth arising within learning economies. Finally, the spectrum of research will encompass evidences stemming from empirical findings related to the controversial effect of Skilled Bias Technical Change in determining the widening of the wage gap between high and low skilled workers and the aggregate output growth trend. We will then combine these results with previously identified evidences about knowledge effectiveness in increasing productivity to conclude by drawing some policy recommendation underpinning the importance of fostering the creation of interactive learning economies.

Literature Review

The strand of literature related to the design of European Industrial Policy and the consequential assessment regarding its effectiveness, has undergone a period of ample transformation throughout the last three decades. The interest in Industrial Policy has in fact apparently vanished during the period ranging from the end of the 1980's and the early 1990's, when the main focus of the European Commission and Member States lingered on the establishment of a sound and reliable Single Market. At that time, the directives characterizing the European Industrial Policy preserved a strong alignment with those envisaged in the early stages of the European Integration process: accordingly, the state itself played a crucial role in an increasing share of economic activities and in particular in the field of industrial policies. As Pedro Fraile Balbin inferred: "State intervention in industrial market was a common feature of almost all European countries after Second World War" ('Spain: Authoritarian Industrial Policy', 1999). Following this statement, it seems undeniable that the presence of the state in the development of the industrial context and its contribution to the related policy framing, was essential to foster economic growth in Western Europe after 1945. Successively, deviating from the previous policy track, during the so called long 80's, industrial policies and state interventionism diminished steadily and were stigmatized as obstacles to economic growth and development. Industrial policy started to be seen as old-fashioned, an obsolete approach overshadowed, by that time, by the boom of the Internet, the blossoming of the financial sector and major developments in other technological sectors. Additionally, the surge of liberalization that characterized several countries during the 1980's further constrained state intervention: the rationale behind this new trend was that the market enabled to allocate resources more efficiently and thus to favour those sectors more likely to succeed. This view implied, consequently, that the role left for industrial policy was that of a mere instrument of protection for the old manufacturing sectors that under the pressure of market conditions would have perished soon. Despite the neat emergence of the "market-leads" view, and the reliance on the correlated implications- i.e. interventionism is less efficient than liberalization- many of the assumptions laying at the basis of this approach, happened to turn into questions, particularly in the wake of the global financial turmoil since the turn of the millennium.

This dynamic has been observed not only at a European level but on a global scale, characterizing also the approach of the economic powerhouses of the past decade- China, South Korea, India and Brazil- which adopted strategies intended to restructure and enhance the growth potential of their domestic manufacturing sectors. Coherently with these new evidences, we may infer that industrial policy is undergoing a period of true renaissance; even countries such as the United States and Great Britain, that have always rejected any form of interventionism -being historically rooted in a market economy-, are beginning to reconsider their economic philosophy in the light of the catastrophic consequences triggered by market failures in the recent financial crisis.

Despite the fact that industrial policy assumed an essential role in favouring the process of integration and proved to be conducive for economic development, it has been largely neglected by historical research literature. As a matter of fact, indeed, there is a consistent amount of researches and case studies which exhaustively encompasses issues related to the development of an appropriate national and regional industrial policies, capable of harmonizing diverging needs and different characteristics of the recipients countries/regions, but none of these surveys has ever inferred about the potential effects of a European industrial policy. The lack of such a comprehensive study may be due to different factors: in a first instance the boundaries of this subset of economic policy are pretty blurred as both the definition and scope vary for each country and within each country; secondly the insufficient availability of reliable databases hinders the development of an analytical framework to produce a quantitative assessment. Nevertheless, Foreman-Peck and Giovanni Federico, provided a pioneering work in this field, "European Industrial Policy", which was intended to disguise the European Industrial Policy from its fuzzy vest by depicting it in a historical perspective. Additional research efforts devoted to clarify and clearly define the scope, objectives and extent of European Industrial policy have been made by numerous researchers such as Khalid Sekkat, Keith Cowling and Pierre-André Buigues, all of which try to shape a framework where to contextualize different policies approach, but failing in applying a true historical perspective. The 1990's mark a period of renewed interest in issues concerning industrial policy, since the increased availability of archival material and the development of modern methods of assessments fuelled debates contributing with fresh and fruitful insights about economic policy and

industrial development. If in the previous period, in fact, some analysts ventured to speak about the “phasing out of industrial policy”-dismissed by an increasing sectorial focus-, their statement have been rapidly refuted by the brand-new “horizontal approach” to policy, whose main aim was to strengthen European competitiveness. This re-emerged interest was probably due to an insufficient performance of European economy, to a shrinking share of the manufacturing sector and to a steady decline in productivity vis-à-vis other economic powers. During this phase of ferment, scholars, analysts, governmental entities and the European Commission itself, changed their attitude and philosophy toward the industrial policy. A valuable paper by Karl Aiginger and Susanne Sieber highlights how” the documents of the EC witness the degree of change in the scope and content of industrial policy” as also suggested by an increased focus on sectorial differences, cluster programs and top-down projects in specific countries. Accordingly, for the first time in 1992 the concept of industrial policy is explicitly mentioned in Article 130 of the Maastricht Treaty, indicating the willingness to restore it as a hub through which building a general economic policy to pave the way for future sustained growth and competitiveness. As Aiginger and Sieber (2005) argue -referring to the previously mentioned article- “it mentions four main goals of economic policy, which clearly constitute an industrial policy themselves”; the general framework traced by these goals shows how at the time, industrial and innovation policy where tightly intertwined. It was hard to disentangle one from the other, since the pace of progress during the dawn of the millennium surged, one could not revise industrial policy avoiding an innovative approach: innovation was key to revisit the business conduct and to resist international competitive pressures. The intentions expressed by the EC, through the publication of documents such as those related to the Maastricht Treaty, compose a strategy led mainly by four criteria: speeding up the adjustment of industry to structural changes, encouraging the creation of a fertile ground to foster the growth and prosperity of SMEs throughout the Community, easing the creation of an environment conducive for co-operation between firms and exploiting the potential of innovative policies leveraging on R&D particularly in the technological sector. From what emerged so far, though, the source to which we may ascribe the re-birth of a deep concern regarding industrial policy is twofold. It consists of external factors, as the pressures and constraints stemming from the external

environment, and internal factors, as the incapacity of the European industrial system to keep the pace and compete with those of the US and other emerging economic powers. Globalization, faster technological progress and the acceleration of structural adjustments, advocated for the establishment of a new economic philosophy served by innovative policy instruments. The call for such a process of restructuring both at a policy and operational level, is even more compelling if one considers the gap between actual economic performance -measured as growth rate, unemployment rate and share of manufacturing sector-and those which were the previously stated target at Community level: European conduct in these sense was rather disappointing. This aspect, however, is worth to be deepened to some extent, as the negative trend experienced by Member States in that period was partially due to an inadequate structure and functioning of the European institutions. One way to understand the reason why Europe had tended to lag in term of economic growth recently, is by considering the transition from extensive to intensive growth. Europe could grow quickly for a quarter of century after World War II relative to the US because the institutions it inherited and developed after the war were all well suited for importing technologies, maintaining high levels of investment, and transferring large amounts of labour from agriculture to industry. Eventually, however, the scope for further growth on this basis was exhausted. Once the challenge was to develop new technologies, and once the growth came to depend more and more on entrepreneurial initiative than on brute-force capital accumulation. Consistent with this view is the fact that Europe's economic difficulties, as already stressed, seem to have coincided with the ICT revolution and the opportunities it affords to economies with a comparative advantage in pioneering innovation. This reflection strongly legitimates the clear change in direction toward which the EC has steered, emphasized by the new approach to industrial policy, which is permeated by an innovative outburst.

The return to a view, which underscores the importance of industrial development in growth perspective, has materialized in those years taking the form of initiatives such as the reform of Structural Funds and the Cohesion policy. As highlighted by John Bachtler and Grzegorz Gorzelak ("Reforming EU Cohesion policy", 2008), within these programs, the EU made an economic effort corresponding to some 550 billion Euros (in three programs from 1989 to 2006), to promote convergence and regional

development at a European and national level. However, in the following years several Member States started to raise questions about the efficacy of Cohesion policy and the effectiveness of Structural Funds with respect to the intended targets. A consistent strand of successive critical assessments drew by analysts and policy-makers in different Member States, opposed as an objection to the resolutely positive evaluation drew by the following Cohesion Reports (1996, 2001, 2004). Building on critical research works such as Boldrin and Canova (2001), Ederveen et al. (2002), this new policy position questioned whether Cohesion policy represented a good value for money. Papers that aim at evaluating the objective effects of EU commitments in this sense, and thus of the impact that Cohesion policy actually delivered to its recipients, vary both for what concerns the content of their investigation (qualitative or quantitative assessment), and for what regards their conclusions. The quantitative evidence for the impact of Cohesion policy is partly derived from evaluations and modelling research commissioned by DG REGIO. The econometric and macro-economic models vary in their estimates of the impact of Cohesion policy, but all attribute significant Cohesion policy impacts on output and income in the less-developed countries and regions of the EU. The empirical frameworks through which the impact of the policy have tried to be assessed (i.e. HERMIN simulation, QUEST model), all concentrates on changes in macro-economic variables, which by themselves could be useful to infer about some likely economic evolution in the future, but may lack significance about the content at stake. Moreover - notwithstanding the positive effects assessed by the previous studies- their conclusions are often hedged by caveats concerning the fundamental assumptions and the data sets implemented in the model. Apart from evaluations about the macro-economic impact in terms of GDP level, GDP growth, employment, and productivity factors, research has questioned more substantively the contribution of Cohesion policy to *convergence*. In this respect, again, Boldrin and Canova (2001), criticized Cohesion policy in the light of their disappointing findings in terms of its minimum impact over regional disparities and long-term growth rates. Following the rationale suggested by these evidences, they concluded that there are mainly three reasons contributing to the persistence of regional disparities and in particular for the establishment of low regional income: low total factor productivity, low employment

rate, high share of agriculture. Accordingly, they finally inferred that the outcome resulting from such a kind of regional and structural policies serves mainly redistribution purposes- motivated by political equilibrium- which do not show any significant relationship with favouring economic growth. The branch of research conducted by Dall'erba and Le Gallo (2003) provides additional precious insights sustaining this view: their observation about the impact of Structural Funds in the convergence process of 145 European regions over the period 1989-1999, led to the assessment of a mixed performance. They found that funds allocation have had an asymmetric effect with respect to different areas: they, indeed, contributed slightly to overall growth – favouring mainly regions in healthy economic conditions, more capable of exploiting beneficial spillovers-, while they stabilized regional disparities, thus emphasizing lack of convergence which echoed earlier cited studies. John Bachtler and Grzegorz Gorzelak (2008) trace a comprehensive set of explanations to justify the gap between the ex-ante intended consequences and the ex-post results of the fund's performance. In a first stance, building on the previous work by Rodriguez-Pose and Fratesi (2004), they argue that there has been an excessive focus on investments in infrastructure, which strongly penalized those regions lacking the capacity to design and implement strategies aimed at economic development and policies such as the labour market reforms. As also suggested by Martin (1998), heavy public investment in infrastructure and business support, may have contributed to some degree to convergence between countries, but may have not encouraged convergence between regions within countries. A wiser allocation of funds, according to Rodriguez-Pose and Fratesi, would have directed investments to education and human capital, which would have ensured a medium-term positive impact on the acceleration of growth. An additional and alternative explanation is found in a number of studies (e.g. Cappelen et al. 2003, Ederveen et al. 2002) where the authors notice that the contribution of Cohesion policy is conditional on institutional capacity: the benefits and positive synergies that the Structural Funds should have granted depend on the institutional recipients' capacity to absorb and exploit them. Their effect is only marginal in the absence of openness and responsiveness to trade, investment opportunities, financial stability and supportive national-level macro-economic policies. The same line of reasoning is supported by an econometric analysis by Ederveen et al. (2006) that

shows how “EU assistance did not foster the capacity for growth in the less developed Member States”; the EU assistance’s effectiveness was dependent on the ‘degree of fit’ of institutional structure, i.e. lack of corruption and international openness. They dare to conclude their study by eliciting a quite paradoxical insight: Structural Funds ended up benefiting the most those countries which needed them the least. The reason for this bold statement derives from the previously discussed issues and is now straightforward: highly developed countries, with their supportive and conducive institutions are able to fully exploit the potential coming from the inflow of resources; on the other hand, instead, in less developed countries the inflow of resources paradoxically leads to a slowdown in growth, due to their underdeveloped institutional background, specifically corruption.

Despite the presence of a consistent line of literature that criticizes the effectiveness of Cohesion policy, the Commission has argued that, for what concerns the qualitative effects, there is a significant ‘added value’ that is overshadowed if one considers only the mere effects of policies on GDP and employment alone. The content and meaning of this added value is an argument highly disputed, and interpretations vary greatly: however it is possible to distinguish different areas of its associated effects. According to the Commission, the availability of EU funding has leveraged additional resources for economic development: it contributed to a ‘financial pooling’ which favoured the mobilization of resources from other funding partners. Moreover, another source of added value is ascribed to the inheritance of a ‘strategic’ approach coming from the multi-annual planning process: this strategic orientation led to the introduction of innovative ideas and to the selection of better projects; to some extent this new approach steered national policy intervention away from the traditional focus on infrastructure and business support to emphasize human resources, innovation and community development. The Commission has also underscored the added value area coming in the form of partnership. Partnership, according to studies such as OIR et al. 2003, and Roberts et al. 2003, has brought a rather horizontal orientation in the design, development and delivery of regional policies. The enhanced transparency generated a higher level of cooperation and coordination which contributed to a deeper involvement of local actors and consequently to a wiser decision-making process delivering better quality regional intervention as a result. This last point is

connected with an ultimate effect of added value spillovers, which is the regained momentum of the integration process. Policies for territorial cooperation improved the integration of border and peripheral regions, and sustained the cooperative relation among regions and urban areas across EU. Coherently with this last point, Taylor and Bachtler 2003, argue that one of the most valuable outcome stemming from this new cooperative inclination is the 'learning effect': through interaction and confront actors engage in a process of mutual learning and information exchange which enrich all the participants. However, most importantly, an intangible effect of the Structural Funds is that they 'give a profile to Europe', making EU more visible to citizens, communities, businesses and public authorities (European Parliament, 2003).

Any consideration about the perspectives treated so far cannot leave apart a reflection about the principle underlying the policy. Since the introduction of Cohesion policy, in fact, the rationale directing the management and allocation of resources relied on the 'traditional' approach to regional policy, originating in Keynesian doctrine and state interventionism in a resource-based economy. This is the approach formulated into what Castells (1997) dubbed the 'economy of places': a condition in which economic realities were much more independent and isolated than it is now the case. As underlined by the several flaws and ineffectiveness showed by the application of Cohesion policy throughout the last two decades, the new knowledge-based economy cannot be treated anymore with the obsolete traditional approach. In Castells' view the 'economy of flows' is the one depicting the current context, where the crucial role is not played anymore by geographic stock of resources, but rather by the flows (of resources) of goods, people, capital and especially information. Accordingly, in the knowledge era, countries will only succeed in gaining a lasting and sustainable competitive advantage if they are able to innovate on a steady basis.

The lessons drawn from the experience of Cohesion policy and Structural Funds implementation in their different and revised versions constitute a bulk of knowledge essential for the formulation of wiser policies, which conveyed to some extent in the design and launch in 2000, of the Lisbon Strategy. The forefront imperative of the Lisbon Strategy was to make Europe "the more competitive and dynamic knowledge-based economy in the world, capable of sustainable economic growth with more and better jobs and a greater social cohesion". To pursue this ambitious mission, the

Commission set out a series of benchmark objectives which could be grouped in three macro-areas: enhance the attractiveness of Europe as a catalyst of investments, foster growth through Knowledge and innovation, creating more and better jobs. In order for Europe to attract an increased flow of investments, a stronger emphasis has to be placed over reforms aimed at eliminating obstacles to the development of SMEs (the real engine of European economy) and at improving the environment in which they operate so as to stimulate entrepreneurship. Furthermore, additional stimulus to productivity and innovation may come from an increased competition within the Internal Market. European competition policies contributed substantially in shaping competitive markets, and this process has to be carried on through the elimination of barriers to competition and the rechanneling of state aid into innovation, R&D and risk capital. The second area of interest of the Lisbon Strategy is, to some extent, self-explanatory, since nowadays the importance of knowledge for the broader economic and societal wellbeing is a universal acknowledge. Since knowledge is at the core of productivity growth and since productivity growth is a crucial factor for Europe -given that it has to compete globally with competitors benefiting from cheap labour and natural resources- it has to invest heavily in ICT, R&D and innovation. Finally for what concerns the third focus area, it spawns from pressures and constraints imposed by environmental change mainly linked to demographic and societal dynamics. These transformations exerted their impacts mainly in terms of changing employment needs, namely: widening the labour-force pool and modernising the social protection system; increasing the adaptability of workers and business and the flexibility of labour markets (flexsecurity); investing more in human capital through education and skills. This overall rearrangement and rethinking of policy proposition should have ensured compliance with the higher level objective in the Commission's view. Producing an ex-post assessment of the achievements of the strategy is not an easy task due to the overly soft law based instruments at its disposal: however, by late 2007, the Commission noticed that EU-15 countries found themselves on track with the set Lisbon target. It has to be recognized, moreover, that despite the devastating consequences of the financial crises – which partially dismantled the achievements of the strategy-, Lisbon Strategy represented an important catalyst for reforms in the EU Member States. Furthermore, the recent crisis has highlighted huge discrepancies

between 'good' and 'bad' Lisbon performers, pinpointing not only differences in performance between 'old' and 'new' Member States, but oddly enough, emphasising divergences also within old Member States. Nevertheless, despite all its shortfalls, the greatest part of EU national actors share the common belief that Lisbon-type strategy is a useful perspective tool to develop future social and economic reforms and to reach a higher level of convergence and policy coordination. In this sense, the financial crisis have plead the cause for further improving and implementing Lisbon-type strategy, as it has proven to respond promptly during period of stable economic conditions (pre-crisis phase), and need now to be upgraded to face the major challenges imposed by the recession with a limited room for manoeuvre. This is the rationale which, in mid-2008, led the European Council to call upon all the stakeholders and interested actors to confront and start conceptualizing about the post-Lisbon strategic decade, and which matured in March 2010 with the Commission publishing of its Europe 2020 strategy.

The first outcome of this strategy rethinking process, materialized in the Barca Report (2009), drawn up by Fabrizio Barca, the then Director-General of the Italian Treasury , under the title, 'An Agenda for a Reformed Cohesion Policy: A Place-based Approach to Meeting European Union Challenges and Expectations'. The 'wake-up call' for the reconsideration of this issue, which then spawn the Barca Report, came from Danuta Hubner, the then EU Commissioner for Regional Policy, who gave rise to a series of hearings and consultations with scholars and researchers worldwide. The case for the reformed Cohesion Policy emerging in this context preserved several principles underlying the policy approach of the last decades (since 1988), but it also included a much more proactive and modern place-based approach to development as the one advocated in previous years by many studies (i.e. Cappelen 2003, Ederveen 2002, Catells 1997). This emerging philosophy fiercely refutes the traditional polarized debate depicting economic geography as opposed to institutional explanations of development. The place-based view tries to reconcile the positions of commentators holding that economic development is mainly subject of institutional capacity, with those sustaining that it is rather a function of economic geography. It does so by proposing a middle-ground between the two opposite view: the place-based approach assumes that institutional framework both determines and is determined by economic

geography. Accordingly, the great challenge facing this approach is that of identifying the proper arrangement satisfying the equilibrium conditions advocated by the interacting and contrasting forces of institutional and geographic contexts. The underlying assumption here is that the traditional dichotomy policies distinguishing between 'place-based' versus 'people-based' are meaningless as they prevent the accountability of a series of significant factors. Knowledge in all its forms is in fact inherently embedded locally, but it cannot be assumed that local knowledge needed to boost growth pre-exist exogenously; this form of knowledge can only be generated through a deliberative process of debate and involvement of local actors pursuing different interests. To confirm this, we may consider how different innovation paths depend on territorial elements deeply rooted in the local society, its history, its culture, its values and its typical learning process. Knowledge creating process needs to be assisted by both tangible and intangible sources: if, in fact, the presence of tangible knowledge assets is allegedly important, the contribution of intangible knowledge in the form of creativity, culture and tastes is essential for the foundation of a fertile ground where to build additional knowledge. The role of knowledge spillovers had, in fact, already been acknowledged in a number of studies (Audretsch, and Feldman 1994; Jaffe, Trajtenberg, and Henderson 1993), but over time proximity has gained an increasing importance in shaping the dynamics of knowledge-flows. In this respect, proximity is referred to not as spatial proximity, but rather in terms of cognitive and social space: the stocktaking of capital in its different forms and social relations which determine the peculiar virtual connection, sharing and receptivity of knowledge in each country and region. This reflection has important implications concerning the criteria of governance applied to the policy-making process. In this sense, a fundamental prerequisite of new industrial policies is its adherence to real world issues and constraints: the process of design should avoid 'paper policy' drawn in purely analytical context, and rather concentrate on aspects which can be consistently monitored and assessed. As suggested by several OECD publications (2004,2005,2007,2008), a multi-level governance framework, capable of fostering coordination among vertical and horizontal governance arenas, should be established. The resulting industrial policy will be more pro-active as stemming from an innovative 'matrix' approach combining both horizontal and vertical approaches with 'framework'

conditions. The policy swift and the emerging new paradigm underpin “the tailoring of the provision of public goods to local conditions; the prioritization of different types of interventions in different contexts” (Rodrik, 2008); and the implementation of tools for appraisal and evaluation (i.e. Critical Assessment). Additionally, greater emphasis is placed on the capacity of local funding recipients to manage, channel and redirect resources autonomously, so as to acquire greater responsiveness and flexibility while carrying out the projects. The increased level of autonomy and flexibility in turn will be framed by the establishment of conditionalities, crucial for granting responsible and consistent processes and actions. Consequently, this approach will provide both a ‘carrot’ and a ‘steak’ to incentive design and reform of institutions. The development and implementation of such matrix approach, strongly advocated in the Barca report and numerous contemporaneous studies, is best understood if we consider that the latter report consisted, in a way, in a response to the challenges advanced some four years earlier by another report, Sapir et al. (2004). This report is characterized by a general myopic view, targeting funds allocation only at a national level, assuming a largely top-down approach, and failing in clarifying precise objectives, underlying rationale and trade-offs of the Cohesion Policy. This last pitfall present in the Sapir report has instead been properly overturned in the Barca report: the study stresses particularly the need to state clearly ex-ante objectives and to focus the spectrum of reform away from simple convergence principle, towards an effort to maximize local development potential. Thus, we may attempt to summarize the recommendations stemming from the Barca report in three pillars. In a first stance, it successfully bundles the social inclusion objective as an explicit goal within the new policy approach; it is able to avoid the myopic view depicting the policy as mainly directed to foster convergence among countries; and finally it is able to intend and express the concept of growth and development in a broad multidimensional framework, accounting for aspects largely neglected in previous works.

The one described so far represents the chronological perspective accounting for the development of the most recent industrial policy reform within the framework of the EU 2020 strategy, which corresponds to the actual focus and research effort exerted in this paper. As may now be clear, the above mentioned Barca report, constitutes the pivot, the starting point and fundamental pillar over which all the following policy

proposals were built: it incorporates thus the fundamental principles and rationale which paved the way for the design and implementation of the EU 2020 Strategy. The EU 2020 strategy represents the bulwark which will support any future policy framework, and the umbrella under which policy reforms originate. This strategy is somehow coordinated with current time global challenges and requirements, its “growth agenda relates very closely to the growth strategy of both the OECD and USA, and reflects an increasing awareness on the part of international organization that the multifaceted nature of growth and development requires a more holistic response than has previously been acknowledged”, as stated by Philip McCann and Raquel Ortega-Argiles (2013). The underlying core concept of the implementation of a multi-dimensional growth agenda lies in the incentives it provides to favour development and enhance growth along transversal dimensions and to allow the establishment of relations among them. Despite the fact that the overall strategy has been erected on the legacy left by previous experiences regarding Cohesion policy, Structural Funds, Lisbon strategy and countless sectorial studies, it is still to be proven whether each of the rings of the chain-forged in an analytical context- will resist pressures and constraints they will be put under by contrasting forces in the external environment.

INTRODUCTION

EU 2020 STRATEGY: a Contextual Characterization.

The EU2020 Strategy was proposed and developed in a period of dramatic changes and turmoil involving the economic stability firstly, and then relapsing on the social and political context. Given the urge to promptly act imposed by the criticality of the situation, early in 2010, the Commission set out two primary objectives to be accomplished in the early stages of the strategy implementation: in a first instance, the issue was to exit from the crisis, secondly there was the compelling need to fix the structural weaknesses in a long-term perspective. However the proposition made by the Commission through the EU 2020 Strategy, went well beyond the intention of exiting the crisis and suggesting structural reforms; its underlying ambition was, for Europe to “ come out stronger from the crisis and turn the EU into a smart, sustainable and inclusive economy, delivering high levels of employment, productivity and social cohesion”, EC 2010. After the 2008-2009 financial melt-down, the economic landscape deteriorated starkly throughout Europe, leading to decreasing growth and productivity levels, deepening structural imbalances and rising social and environmental issues. The development and driving rationale of the strategy heavily drew from past experiences such as the EU Cohesion policies and the Lisbon Strategy: in that they account for European heterogeneity and are aware of the need to tackle issues adopting strategies well-fitting the context (i.e. country or region) for which they are designed. Accordingly, we tried to appraise whether the EU 2020 strategy is able to interpret the new imperatives imposed by the knowledge era, where countries will only succeed in gaining a lasting and sustainable competitive advantage if they are able to innovate on a steady basis. This is coherent with the strategy’s ultimate goal, namely enhance Europe’s growth and competitiveness. The pursuit of this objective will revolve mainly on two strategic instruments: a focus on the regional dimension to ensure policy adequacy, and a focus on the role of knowledge, particularly regional embedded knowledge, in fostering growth. In this sense, the concept of place-based view-and the approach it entails in the process of policy-formulation- is central, and serves as a theoretical yardstick against which measuring the strategy’s adequacy and effectiveness. Throughout the work, we emphasize the major flaw of previous regional

policy efforts, in that they were not able to grasp the essential diversities characterizing their recipients countries. Conversely, the EU 2020 emerges as being more consistent with the varying regional context and adapt to face the challenges imposed by globalisation in terms of competition and innovation. Specifically, the agenda appears structured and comprehensive, it focuses on elements which are crucial in the current knowledge-based economy. It embodies innovation and knowledge as the drivers to lead the overall European economic system to a revival. Consistently with the analysis of the strategy, we propose a consideration about the capacity of knowledge -represented in the form of skill and expertise- to enhance growth potential. The resulting findings are coherent with our previously assumed position: namely, the literature provides satisficing evidences about the positive impact of knowledge (in all its forms, e.g. embedded knowledge, innovation, etc.) in favouring growth. This observation will drive our final argument, supporting the consistency of the strategy in the light of challenges and opportunities dictated by the knowledge-era.

CHAPTER I

1. Where Does Europe Stand Four Years On?

The entity of the recession experienced by the European economy in 2009 had no precedent in our generation and since it set in nobody could hardly predict or expect consequences as the ones actually observed. In the year 2009 only, the aggregate EU GDP plummeted by a 4.5%, and apart from a weak and temporary relief in 2010, it kept on following negative trends during 2011 and 2012. Only four years after the first blow, economic indicators for Europe, returned to show timid positive responses. In 2013 a gradual recovery had set in and forecasts for the years 2014 and 2015 predict increases in GDP in the order of 1.5% and 2% specifically. However these estimates vary greatly among countries, different growth paths can be detected for different group of countries, with some of them particularly destabilized and still lagging behind and others recouping the lost ground. When the strategy was launched in 2010, the effects and duration of the crisis were largely ignored, and thus any projection of future scenarios relied on three possible states of the world: the return to a 'strong' growth; a period of 'sluggish' recovery; and the risk of the 'lost decade', EC 2010. (GRAPH EU GDP in 3scenarios)

In the light then, of the evolution of events characterizing the years from 2010 to 2014, the scenario that is emerging resemble more closely that of a sluggish recovery, with EU GDP reaching 2008 levels only in the current year. In this frame, forecasts expect to see Europe as slowly going back to the path of growth attaining an average growth rate for the period 2014-2020, at around 1.5%. If we compare this figure with that accounting for the pre-crisis period, the comparison is quite bitter, as within the 2001-2007 time-lapse, annual GDP growth was about 2.3%. The impact of the crisis in fact, goes well beyond the effects one can immediately notice by looking at macroeconomic variables; of course, they are quite telling about the underlying economic dynamics, but they cannot afford to depict a picture comprehensive of the multifaceted character of the real economy and its several interdependencies. The crisis has in fact eroded growth potential not only by affecting current productivity level, financial stability and fiscal consolidation, but it has also hindered the creation of additional

knowledge and wealth by destroying jobs, firms and “know-how”. These consequences will relapse also on EU long-term performance, since what had been lost so far cannot be recovered right away, and represents a sort of ‘sunk-cost’ for Europe, which has now to regain competitiveness. Bearing this in mind is fundamental to design an EU-wide strategy wise enough to account for structural weaknesses and challenges imposed by the heterogeneity of EU Member States.

1.1 From Catch-up to Divergence

Despite the fact that major differences were already acknowledged among and within countries, the hit of the crisis contributed to widen and deepen these gaps even further. Divergences relate not only to the objectively measurable economic variables such as unemployment, sovereign debt level, deficit or R&D expenditures, but they spread their influence over other contexts. The greatest risk embedded in the emergence and widening of these imbalances is that they become structural: this in turn would additionally fragment Europe, jeopardizing the benefits stemming from cohesion and the process of integration and limiting its growth ‘momentum’. The process of convergence or ‘catch-up’ experienced by numerous countries in the last decades seems now to be reversed, favouring instead the core-periphery separation not only in economic terms. These asymmetries appear starkly also when assessing the progress of each Member State vis-à-vis the targets established by the strategy, witnessing the differing potential and capability of each country. The EU 2020 strategy is ambitious and already in 2010 it set out long-term goals to be accomplished within an ample horizon, while it simultaneously mandated strict directives to follow in order to exit the crisis. As of today, the completion of the long-term goals is still to be realized, as during the first years of implementation of the strategy, the resolution of structural issues related to the impact of the recession were way more pressing than any other instance. The major challenges pinpointed by the first version of the EU 2020 are still there, and need to be tackled decisively.

1.2 A Snapshot of Major Post-Crisis Challenges:

1.2.1 Financial Distress

The financial sector was the hub from which the crisis generated and then expanded through all the other branches of the economy: accordingly, it was also the first sector to be revised and strongly regulated. At a national level, the revision of financial sector, mainly translated into an effort to ensure the sustainability of public and private finance. In 2010, the level of average EU Government deficit reached 6.5% of GDP and has been reduced to 3% by 2013, witnessing the huge effort exerted by Member States to restore sustainability of their public finances. However, during the same years, due to the slowdown in growth and inflating deficits, the so called 'sovereign-debt crisis' arose. Several countries experienced soaring levels of public debt contributing to limit their capacity to react and to fix financial imbalances. To get a sense of the burden that the financial situation entails, it is enough to notice how the sovereign debt ratio increased, from an average of 60% of GDP prior to crisis to an 80% in 2010 and a forecasted 89.5% in 2015; only from then onwards the ratio is expected to decline. The directives enacted to treat the financial side at a European level, are likely to be effective only if accompanied by reforms at a national level aimed at improving the efficiency of public expenditures and administrations. Additional support may be provided by a reorganization of the tax system, more conducive for entrepreneurship and incentivizing investments by shifting the tax burden from labour to consumption; growth and environmental sustainability could also be enhanced by imposing taxes on property and pollution, thus improving European growth and social models. Difficult access to finance has also constituted a fundamental hassle in the recovering phase, with commercial banks restricting dramatically their lending capacity, households and entrepreneurs could not get the necessary financial endowments. Furthermore, in a parallel, the level of private debt, already high in the pre-crisis period rose further due to increasing level of the interest rates brought about by the downstream effects of the crisis. In this sense, reducing financial exposure is a 'must', even if this, in combination with low growth and low inflation may result in negative effects on growth. Only in very recent periods (first quarter of 2014) the financial sector in general, and more specifically the banking sector has shown some

sign of relaxation testified by an increased provision of endowments to small and medium-sized enterprises. The overall picture is characterized by a trade-off between the reluctance towards taking on the risk related to financial exposure and the need to increase the availability of channel for financing to sustain growth. However, thanks to the blend of ad-hoc measures adopted at supranational level and efforts exerted at a national one, EU is paving the way for financial relief.

1.2.2 Poverty and Unemployment

A way to account for the consequences of the crisis on the real economy is by observing the path of unemployment: it is indeed pretty indicative of how, the society as a whole is affected by the instability originated in the financial sector. The unemployment rate, started climbing the ladder of poverty soon in 2008 when the average EU rate was around 7%, to reach an alarming 10.9% in 2013 and is expected to decline only slightly in the predictable future (10.4% in 2015), EC 2010. The issue regarding the situation of the labour market, becomes even more difficult to disentangle since long-term unemployment- i.e. the percentage of unemployed active population that remains unemployed for more than one year- has increased from 2.6% to 4.7% in four years (2008-2012). This is a sign which particularly worries economists and policy-makers, since it may imply an absolute increase in the level of structural unemployment, which would have major consequences on the structure of the labour force, the growth potential of the economy and additionally also on the political and social side, triggering social exclusion and rising level of poverty. If previously we inferred that EU countries differ substantially in the way they were able to react to the crisis, this still holds true particularly for what concerns their performance with respect to unemployment. To see this, a comparison between the best performer and the worst one, sees Austria opposing its enviable 5% unemployment rate to a dramatic 27.6% in Greece in 2013. This huge gap discloses just a fraction of the underlying differences between the two countries and is suggesting that a contextual approach (i.e. 'Framework program' and place-based approach) shall be adopted. Another consideration that arises when confronted with the plague of unemployment is that it hits broadly the whole population, but its effects are felt more intensely by people

over 55, which face several obstacles to be reintegrated in the labour market, and young unemployed (15-24), which are denied the possibility to enter the job market due to their lack of experience. The latter in particular represents a structural weakness of many European countries whose rates of young unemployment reach dramatic peaks: as much as 59.2% in Greece and 55.7% in Spain with respect to 23.3% of EU average.

1.2.3 Societal Change

The circumstances under which we live today cannot leave apart the global dimension: European society is nowadays endogenously characterized by domestic forces and exogenously shaped by global factors. The global environment within which it operates and interacts impose pressures and constraints to which promptly react, and simultaneously offers opportunities to be advantageously exploited. To this end a high degree of fit with the environment and responsiveness to its forces are fundamental prerequisites to successfully change and adapt to a dynamic world. We are witnessing the emergence of new urban and rural lifestyles, new consumption and mobility patterns, new family settings and the overbearing presence of technology in our lives. These are general dynamics involving countries on a global scale, but they somehow translates into specific phenomena characterizing each context or region according to its features. In this sense, we could identify two major trends that will frame the development of EU 2020 strategy: in a first instance the ageing of European population, and secondly the increasing inequality within the union. Ageing of European population is a gradual process, which saw the median age in Europe increasing from 35.7 years old in 1992 to 41.5 in 2012 and is projected to reach 52.3 by 2050, EC 2010. This process led primarily by improvements in life standards, and by the assistance provided for by the welfare system, creates not only opportunities, but particularly threats. Having an increasing fraction of the population continuously ageing has far reaching consequences for Europe's society and economy. As the portion of elderly people widens with respect to the totality of the population, in fact, the labour force -diminishing with respect to total population- will have to work to sustain an increasing number of people. This trend is properly captured by projections

related to the likely development of economic dependency – the ratio of people who are in employment and those who are not- which is expected to increase from 1.32 in 2010 to 1.47 in 2030, thus creating major challenges for the social adequacy and financial sustainability of the welfare system. To respond to this threat, Europe should carefully exploit the potential benefit deriving from cautious governance and management of migration flows. It is now two decades that net migration exceeds the natural population increase, accounting for two-thirds of Europe's population growth. The rationale is that migrants could partly replace (retiring) Europeans in the employment, contributing to the sustainability of the welfare system; Europe has in fact to reinvent itself from this point of view, it has to convey more people in the employment and ensure that they work longer and more productively, as only in this way it will be able to sustain the overall society in line with the increase in life expectancy and healthy life years. An additional issue particularly emphasized by the impact of the crisis, concerns the fairness of the process of redistribution of wealth created and delivered through growth. If indeed, wealth and GDP have risen steadily over the last decades, their resulting benefits to society in terms of income have not been distributed evenly. Since mid-1980's, in fact, imbalances in income distribution have worsened in the EU and the Commission assessed that on average, in 2012, the top 20% of the population earned as much as 5.1 times the income of the bottom 20%. Equality has always been a fundamental value on which European culture and identity is founded, accordingly actions will be taken to unleash and foster the fairness and effectiveness of the redistributive system. Ensuring distributional fairness is essential for Europe not only to fix domestic social imbalances, it can also be supportive to face major challenges to which Europe's economy are nowadays exposed through globalisation. A more homogeneous distribution of wealth would push both consumption and production, allowing Europe grow its share of exports even larger. Despite the fact that Europe is already the world's larger exporter and bigger trader in goods and services, it has to further improve its competitive trading position, since forecasts predicts that in the next 10-15 years 90% of the world's growth will generate outside the EU. In this sense, Europe has to 'think global': it has to try to exploit new channels offered by the new globalised world, to reach and benefit from the emergence of new markets and new growth opportunities. It has to establish an ad-

hoc environment for the development of SMEs businesses, to smoothen rigidities so as to attract FDIs and to line up within global value chains permitting to deliver products and services in a superior way. It is a matter of joining effectively value delivery networks globally, benefitting of direct and indirect network spillovers. This approach will enhance Europe's ability to compete internationally and will transform it in an active participant within the economic global arena. The capacity of Europe to compete internationally, by the way, is firstly shaped at home. The EU enjoys particularly the benefits deriving from integration within its boundaries and within the international markets: European firms are so successful internationally thanks to the involvement and collaboration of suppliers, partners, and other stakeholders of other EU countries within their value chains. By favouring the process of information exchange, interaction and knowledge sharing among domestic and foreign stakeholders, European firms are able to detect which key competitive activity are to be performed, how and by whom, thus enhancing not only the value chain effectiveness, but also productivity and final value delivery. This is witnessed by evidences showing that SMEs operating in an international environment grow faster and are more innovative than those who restrict their operations to local markets. Europe could rely on the international orientation of its businesses and on its strong trading position to respond somehow to the challenges presented by the crisis, exports result -as in the past- as a fundamental strength. If this trend shows how Europe's Member States were capable to regain competitiveness through trade, an opposite trend shows how European growth potential is deteriorating due to the delay in the implementation of ICT and to a decline in productivity growth. Euro area output in the last three decades has decreased steadily as consequence of the switch from extensive to intensive growth: nowadays EU output per capita attains 70% of US level. It is commonly estimated that the implementation of adequate reforms in the product, services and labour markets – calibrated to each country's specificity- have the potential to reinforce productivity in the long-term. Re-shaping EU institutions to improve their degree of fit with respect to the economic context, is also a crucial condition to smoothen the transition from extensive to intensive growth and to interchange between radical and incremental innovation. Supporting reforms fostering innovation and growth is conditional to the enhancement of human capital. Improving

the quality and intensity of research and development, education and training systems is pivotal to increase and sustain productivity. Recalling the previously mentioned issue about the ageing of European population, sustaining productivity appears an even more compelling issue for ensuring the sustainability of the overall system. The gap which arose in these terms between EU and US, spawns mainly by lower investments and adoption of ICT, which allowed US to emerge as the forefront leader in the state-of-the-art communications infrastructure. Europe, on its side, cannot forgo the occasion to reap this source of competitive advantage and enhance its growth potential.

1.2.4 Natural Resources and Environmental Concerns

Increasing awareness about the scarcity and imminent exhaustion of natural resources, brought to the fore major concerns and debates regarding the sustainability of the current level of exploitation of the environment. Just during the twentieth century, the world increased its consumption of fossil fuel by a factor of 12, whilst extracting 34 times more material resources, EC 2010. Businesses confronted with constraints related to scarcity of natural resources, or excessive exploitation of the physical environment are facing rising costs and bearing greater risks: this in turn has direct consequences on the economy as whole in the form of rising prices and higher volatility. Moreover, additional environmental threats such as water and air pollution and lack of adoption of sources of renewable energy, are particularly strong in many European regions. Unfortunately the current economic system, still encourages an inefficient use of resources: the World Business Council for Sustainable Development strongly calls for a green-revolution in the way resources are exploited, advocating a 4 to 10 fold increase in resource efficiency. This appeal is backed by a marked business rationale, as increased resource efficiency would improve competitiveness and profitability. However, both on a global and European scale, environmental concern and awareness is not homogeneous: some countries are effectively implementing environment-friendly policy to reduce human footprint on earth and leave a better place to live in to their offspring; other countries instead are too focused on their production capacity and competitive position to adjust their policy accordingly. Within

this framework, enlightened governments and organizations are already implementing policies and course of actions -in line with the general objectives headed for by the “green-movement”- which establish environmental care as a fundamental value of their culture.

CHAPTER II

2. EU Industrial Policy: Proposals to Pave the Way to a New Growth Path for Europe

Europe calls upon, in this period, all Member States to take a crucial step: design and implement a new socioeconomic model. Observing the success enjoyed by the US, with its lead in many technological sectors and its high level of productivity, may tempt someone to suggest to merely inherit and apply US's model to the European context. This advice, however, leaves apart several considerations about the viability and feasibility of such a move. European and American institutional frameworks are consistently different: for instance, in the 'old continent' it would be difficult to implement a state promoted industrialization approach or to limit individual freedom; the welfare function of Europeans places a higher emphasis on social inclusion and sustainability than do that of citizens in Asia or US. The differences in history, culture and values are way too profound to allow for a top-down imposition of the US model in Europe. Thus what is suggested is that Europe has to find its own socioeconomic model, accounting for all the differences and specificities of each context and their overall interactions. This process has already started and took on the form of the EU 2020 Strategy, which calls for smart, sustainable and inclusive growth. As the Commission states, however, "a strategy paper like EU 2020 is one thing, following the strategy is another". In this sense, we have to be aware about the difference between the possibility to design a strategy and our capability to implement it then in reality. The Commission, should accordingly, base its future decisions on past experiences such as those related to the Lisbon Strategy or even the older Cohesion Policy. Lessons drawn from those past commitments suggest that strategies were not followed at all, or were only partially due -inter alia- to their top-down design. Additionally, evidences show that another fundamental pitfall of previous policies and strategic planning resided in the lack of focus on the varying context characteristics, recalling in a way the critics moved by the supporters of the place-based view. Finally, past experiences also highlight the fundamental lack of an instrument to monitor, assess and report ongoing developments and final results of the implemented strategies, denying the possibility

of intervention and evaluation. Having realized and pinpointed all the major flaws inherent to past policy-formulation, the European Commission, with the Directorate of Research in charge of large integrated research programmes, presented a project for a “New growth path in Europe with higher emphasis on social inclusion and sustainability”. This “Framework Program”, tries to address all the fundamental weaknesses of previous strategies by expanding the spectrum of research over the changes necessary to pave a new growth path, how to reform European institutions to be more conducive for dynamic change, on how the objectives of transforming the growth trajectory can effectively spread at a regional level. Through the implementation of this four years program (started in April 2012), the Commission hopes to increase the chance that EU 2020 Strategy will be adhered to, that Member States effectively comply with its directives and that Europe overall will select a high profile, of sustained growth path capable of differentiating from existing models.

2.1 Past Diversity and Renewed Interest in Industrial Policy

European Member States’ attitude and interest toward Industrial Policy varied consistently over time. Apart from a preliminary experience of policy coordination at supranational level, with the Community for Iron and Steel of the post-war period, industrial policy remained for a long time a national issue. The main trend observed in the following decades- apart from a general uninterested attitude- was that of state interventionism, followed then by a period of horizontal policy for competitiveness. Eventually, a point was reached in which someone talked about Industrial Policy as a ‘dying breed’, (Aiginger, 2007). Analytical studies of past strategies reveal that in general countries which relied heavily on state intervention, performed poorly if compared with countries founding their industrial policy on the promotion of synergetic externalities. In this sense a paradigmatic example is provided by the experience of a group of Scandinavian countries (i.e. Sweden, Finland and Denmark), which conspicuously invested in R&D and education with a particular focus on the new Information and Communication Technologies, giving birth to a knowledge driven economy. Nordic countries and their experience is likely to serve as a benchmark for a future-oriented industrial and innovation policy prioritizing knowledge enhancement

in all its forms. In the meanwhile in the rest of Europe, and particularly in Southern Europe, concerns about Industrial policy diminished or alternatively focused on sub-optimal investments patterns such those in the military sector. In countries where military spending was higher, civil innovation capacity was prevented, signalling the demise of synergies between the military sector and civil technology sector. Successively, following the increased competitive pressure exerted by new emerging economic powers and the persistent technological lead of the US, after 2000 a renewed interest in Industrial Policy emerges. The renewed European directives were now emphasizing the need for an horizontal approach to policy formulation, complemented by vertical intervention to account for inter-sectorial differences (i.e. standardization). This new approach is attesting as the leading one, it is labelled 'matrix oriented approach' (Aiginger, Sieber 2006) for its characterization of the strategy on a multidimensional framework: industries are rows and measures are columns. Superior emphasis about Industrial Policy has been registered during the financial recession, when countries which could rely on a strong industrial base (Austria, Sweden) and manufacturing sector were able to absorb the effect of the crisis more smoothly, as a healthy industrial base has the capacity to absorb economic shocks.

The crisis and its devastating effects constitute a good paradigm from which starting to derive guidelines and suggestion to draft a future-oriented Industrial Policy. Advises spawning from past failures and successes would all convey in the imperative to design a policy embedding both industrial and innovation policy and univocally based on research and education, i.e. Knowledge. This new line of policy should re-emerge as a phoenix from the ashes left from the devastating consequences of the crisis and of the ineffectiveness of past policy experience. It has to encompass SMEs as well as large multinational firms, fostering the creation of strong links between enterprises and universities, resulting in network and clusters enjoying positive synergies and spillovers and delivering superior wealth. It has also to grant equal opportunities at the outset as well as to promote life-long learning. Moreover this system of network and cluster is able to produce superior innovation if integrated with already existing knowledge-base and additional potential knowledge sources. In this sense, the creation of an international knowledge-pool, integrating international talents, newcomers and international researchers is essential and grants potential for a steady knowledge

creation, since interactions are always proactive. A new industrial and innovation policy, has to be shaped according to the new challenges imposed by the globalisation era, but it has also to be capable to grasp and exploit the related advantages. The core concept ensuring the effectiveness and adequacy of such a policy lies in the eagerness to understand different cultures, languages and business attitudes; openness is the essential criteria. Industrial Policy has to be systemic, meaning that it stems from the values and objectives expressed by the society, and has to pursue those specific objectives. Within European boundaries, these would be higher incomes, greater social inclusion, equality, a stable financial system and accordingly industrial policy should promote these goals by, for instance, shifting innovation towards social and ecological sustainability while keeping competitiveness and growth potential. In this sense, a “Systemic Industrial Policy is pulled by vision and pushed by competition”(Aiginger, WIFO 2012).

2.2 Smart Growth: Knowledge and Innovation as Economic Drivers

The concept of smart growth entails establishing knowledge and innovation as fundamental drivers of economic growth. As already analysed this requires a stronger emphasis on education, research and development and training system. Europe has to implement reforms fostering a learning process over several dimensions: improving the quality of education provided, favouring the creation of clusters and networks of knowledge pools and enhancing innovation and knowledge transfers throughout the Union. This imply major investments in information and communication technologies and the creation of a system capable to effectively turn new ideas and inventions into new knowledge: Europe cannot forgo the opportunity offered by its state-of-the-art cultural background, and has to strive in order to transform it into new knowledge and skills to fuel its growth potential. In order for this re-arrangement to work successfully, by pushing growth, creating new and better jobs and addressing European societal challenges, it has to be coordinated with entrepreneurship orientation, finance and a focus on market opportunities and consumers’ needs.

For what concerns innovation, Europe has mainly to increase its fraction of investment in R&D. European endowments in this direction are scarce and non-competitive with

respect to major competitors: while EU shows an average R&D spending below 2%, US attains a 2.6% and Japan 3.4%. It is also necessary to consider that it is also the composition of R&D that impacts innovation: Europe should incentivize and improve the conditions for R&D investments in the private sector, whose lack mainly account for gaps at the aggregate level. Europe has to try to intensify both the quality and quantity of education within the Union's boundaries. A comparison between European and US and Japanese educational attainment and performance, results in inferior figures as regards both criteria. Additional effort should be exerted in order to ensure a higher degree of fit between labour market needs in terms of skills and education and their available supply. As already discussed the arise of the 'digital society' offers unprecedented opportunities to those countries ready to exploit them: Europe accordingly, cannot forgo these opportunities. It has to restructure its infrastructure in order to exploit the full potential of ICT, allowing the on-line dissemination of knowledge and distribution of goods and services. Any significant action taken in this direction will unleash Europe's innovative potential, will enrich and improve educational outcomes and the quality and outputs of education institutions. Importantly, to ensure the effectiveness of policies aimed to pursue this end, they should be consistently delivered at a regional, national and EU level.

2.3 Sustainable Growth: Promoting a Resource Efficient, Greener and More Competitive Economy

Sustainable development means acknowledging the importance of the environment and its related resources as fundamental assets in the design of growth strategies. Environmental care constitutes today a fundamental pillar in strategic planning, since countries adopting this approach are likely to enter profitably new markets (i.e. green technologies), acquire higher profile competitive position and safeguard their natural resources. Contextually, Europe should aim at building a resource efficient, sustainable and competitive economy, exploiting its leadership in the race to develop new processes and technologies, speed up the roll out of smart grids using ICTs and strengthen the competitive advantages of its businesses. The implementation and effectiveness of such an innovative and farsighted strategy is conditional on the

perception and reaction of consumers to its initiatives: an effort to acknowledge and communicate the importance of growth sustainability should be made at EU, national and regional level, trying to instil it as a fundamental value of the modern culture. Assisting consumers to value resource efficiency will enable Europe to prosper in a resource constrained economy, while preventing environmental degradation and unsustainable use of resources.

Since the post-war period of export-led growth, the EU has always prospered through trade, but it has to face today intense pressures on the export markets. Europe has , accordingly, to improve its competitiveness vis-à-vis its main trading partners and to maintain its lead in the market for green technologies. Improvements in this direction will also have positive side effects for the fight against climate change: enhancing resource efficiency would significantly help limit emission and reducing human footprint on the physical environment. As already argued reshaping European growth strategy according to sustainable criteria will have major economic advantages: meeting the energy goals could turn out in a 60 billion euros savings in oil and gas imports by 2020, and through advancing the integration process of the European energy market could add an extra 0.7% to GDP, EC 2010. Moreover, the implementation of the resource efficiency and renewable energy objectives alone, have far reaching potential with respect to employment creation: it is estimated that it could result in 1 million new jobs. Finally, Europe shall reduce its resource dependency, envisaging alternative paths through which reach and get those resources it is not endowed with so as to gain a competitive advantage.

2.4 Specify a Concrete Course of Action Through Flagship Initiative: “An Industrial Policy for the Globalisation Era”

The impact of the crisis was a major one for the entire European industrial base and especially for SMEs, following which, all sectors are now confronted with challenges imposed by globalisation on one side, and the necessity to adjust industrial needs to a resource constrained, low-carbon economy on the other. The consequences produced by these challenges will vary sector by sector: occasionally challenges may represent unprecedented opportunities to exploit for some sector, while forcing other sectors to completely rearrange their structure and reinvent their business. The Commission will have to collaborate closely with the universe of different stakeholders influenced by changes in the industrial structure and strategy. Businesses, trade unions, academics, NGOs, consumers, organizations and in general all the actors participating to value creation through the value chain activities will participate with the Commission to draw up a plan for a modern industrial policy able to account for and respond to all the challenges described so far. The framework that will emerge from this collaboration will aim to support entrepreneurship, to promote the competitiveness of Europe’s primary, manufacturing and service industries and allow them to seize opportunities and prospects offered by globalisation and the green economy.

More concretely the flagship initiative disentangle this general issue into more focused areas of intervention, distinguishing between supranational (i.e. European) and national intervention. Specifically at EU level, major efforts will be exerted to:

- Create an ad-hoc environment for business development, strengthening and differentiating the existent industrial base as well as favouring the transition of manufacturing sectors to greater energy and resource efficiency
- Implement and develop a horizontal approach to industrial policy integrated with vertical instruments (e.g. standardization) to ensure reform’s consistency and effectiveness.
- Ease the making of business especially for SME’s, creating a more appealing environment by reducing the costs of doing business and promoting the establishment of clusters and smooth access to finance.

- Launch a program of restructuring devoted to obsolescent sectors and sectors experiencing particular difficulties in catching up from the crisis by redeploying skills and activities within high growth markets (e.g. market for clean and renewable energy).
- Promote production processes and technologies that minimize natural resource exploitation and increase investment in EU's existing natural assets.
- Encourage the internationalization of SME's -accounting for over the 99% of EU businesses- so as to fully exploit European growth potential.
- Ensure the viability and efficiency of infrastructures and networks throughout the Union to grant industry an effective access to the Single Market and the international market.
- Enhance the competitiveness of the European tourism sector.
- Revise regulation to make it more supportive and conducive for the process of industrial restructuring and conversion of the manufacturing sectors; to improve the method of European standard setting to leverage it in favour of European Industry competitiveness in the long-run.
- Renew EU strategy to endorse the role of Corporate Social Responsibility as key element in granting long term employee and consumer trust.

Within national boundaries, instead Member States will have to exert their efforts in order to:

- Improve the business environment for innovative SMEs, including through public sector procurement to support innovation incentives.
- Strengthen intellectual property rights
- Reduce the administrative burden and red tapes for companies and enhance the quality of business legislation.
- Increase coordination and communication flow among the different stakeholders involved in the restructuring process to detect potential bottlenecks and share a common analysis on how to sustain a strong industrial and knowledge base.

2.5 Assessing Current Results of the On-going Strategy: Did Flagship Initiative Work?

As clearly emerges by the specific actions and focus areas underpinned by the Flagship initiative, the strategy's goals are rather ambitious, trying to combine revolutionizing industrial changes with diversification, innovation and sustainability. The development of such a challenging initiative must, accordingly, be closely monitored and supervised to ensure that its real world implementation strictly follows Commission's guidelines and objectives. To this end, Industrial policy Communications are drafted regularly and support the transition of initiatives into policy. The latest release dates at 2014, and recognizes that notable progress has been achieved towards the implementation and completion of the stated objectives: the Communication infers that about 90% of the key actions envisaged in the original document by the Commission have been completed or are ongoing. Particular emphasis has been placed on the side of SME's as a primary goal: in this respect, several improvements have been realized, starting with the revision of the Small Business Act for Europe and the plan to widen financing channels and internationalization of SME's in 2011. In 2012, within the context of revision of the regulation, a standardization package was launched to make standard setting more efficient and to leverage it in favour of European businesses' competitiveness. In 2013, to regain growth 'momentum', the COSME programme was launched (Competitiveness and SME) along with Copernicus and Galileo, two space policy initiatives to provide a new dimension for service industries. Other actions aimed at improving legislative and regulatory framework have been adopted, with a particular devotion to ensure the streamlining of bureaucratic issues and of legislative frictions. Through the adoption in 2011 and 2012 of the Single Market Act I and II, moreover, the cost and time of doing business have been significantly reduced while providing a consistent boost to innovation and modernization of industry. However, when assessing the achievements reached by the strategy, we have to account that, while trying to transfer initiatives into actions, the EU was also striving to respond promptly to the poundings of the crisis. Many actions were implemented against the background of the recession, and their success represent already a good signal for the overall strategy. Furthermore, we shall consider that, many of the purposes intended in the "Industrial policy for the globalisation era", and actions adopted therein have a

medium-to-long term horizon (3-to-10 years), and will need time to deliver significant results. During the four years since the policy implementation, however, national budgets' endowments necessary to restructure networks and infrastructures shrank, the conditions to ease access to finance for SMEs have experienced a setback, and skills transfer from vanishing to high growth sectors has been slow. This is the frame within which the strategy's results have been recently assessed.

CHAPTER III

3. Heterogeneity and Policy Challenges: A Differentiated Innovation Policy Approach in Regional Perspectives

Heterogeneity is probably the most distinguishing feature of Europe, and its influence has far reaching consequences at a social, economic and political level. This consideration is crucial for policy-makers, which have to account for differences across Member States in the process of developing initiatives directed at a European level. As already highlighted in this paper, in the section related to the “Literature review”, this issue has taken on the form of a real challenge jeopardizing the effectiveness and success of recently proposed policy reforms. This concern was the principal focus of a consistent strand of literature and research efforts, which culminated in 2009 with the publication of the Barca report. The former represents a milestone in the context of policy approach and formulation, capable of addressing the twin challenges associated with the development of a policy consistent with a varying institutional environment and varying levels of development. This enlightening work, largely drew from previous Cohesion policy drafts, but it inherently entails a much more proactive and place-based approach to policy design and implementation. The role that this innovative approach embeds is that of filling the space-blind arising between the theoretical implications of ‘paper policy’ and its actual capacity of implementation in reality. The place-based view tries to reconcile the positions of commentators holding that economic development is mainly subject of institutional capacity, with those sustaining that it is rather a function of economic geography. It does so by proposing a middle-ground between the two opposite view: the place-based approach assumes that institutional framework both determines and is determined by economic geography. Accordingly, the great challenge facing this approach is that of identifying the proper arrangement satisfying the equilibrium conditions advocated by the interacting and contrasting forces of institutional and geographic contexts. The underlying assumption here is that the traditional dichotomy policies distinguishing between ‘place-based’ versus ‘people-based’ are meaningless as they prevent the accountability of a series of significant factors. In the current globalised Europe, it makes no sense yet to discern

policies on these two dimensions, rather a more integrated, and simultaneously, territorial focus should be adopted. The development of the integration process, particularly intensified in the last decade, along with an increased mobility and virtual proximity allowed by the blossoming of the ICTs has narrowed European boundaries, bringing one nation closer to the other. Continuous interactions, exchanges and knowledge transfers take places within the Union, favouring the creation of international clusters and networks and virtually reshaping national boundaries. Under these societal and demographic forces, new regions and territories blossom while others strive to keep the pace of development and competition and tend to lag behind. This dynamic entangles the task of designing a well calibrated policy capable of accounting not only for structural and fundamental differences among Member States, but also for the on-going transformations at a subnational (i.e. regional disparities within countries, convergence regions) and 'cross-boundary' (macro-regions, multinational clusters and networks) level. This reflection has important implications concerning the criteria of governance applied to the policy-making process. In this sense, a fundamental prerequisite of new industrial policies is its adherence to real world issues and constraints: the process of design should avoid 'paper policy' drawn in purely analytical context, and rather concentrate on aspects which can be consistently monitored and assessed. The tensions inherent in the dichotomous approach of competitiveness and cohesion point to the need for a multilevel approach to the socio-economic governance of the EU and enabling grand strategies, for example Europe 2020, to develop a better fit with operational effectiveness. Multi-level governance (MLG) as concept and practice has been influential in decision-making processes and implementing cohesion policy (Leonardi 2006). But, even more importantly, the lack of a comprehensive, multilevel and multichannel institutional governance in which other policy domains are integrated, constrains the added-value of cohesion policy. Moreover, it may reduce the efficacy of an MLG approach if the impact of cohesion policy is difficult to disentangle from other aspects of regional economic performance (Martin and Tyler 2006). This comment appears to be most pertinent to Europe 2020 that only contains a general overview on cohesion policy, and it is left to the EC's Communication Cohesion, the European platform against poverty and social exclusion: *A European framework for social and territorial cohesion*

(European Commission 2010) to attempt to address this lack of detail. Added-values arising in the form of partnerships, enhanced integration, financial pooling and strategic orientation may be hindered in their development by the fundamental lack of a regional perspective capable of addressing territorial disparities and dynamic changes. In the light of this evidence, we may reconsider the completeness of EU 2020 in addressing this flaw. Indeed, even if only one of the seven flagship initiatives contained in the document explicitly states its content as an intentional reform of the industrial policy, at least other four initiatives (*Innovation Union, A digital agenda for Europe, Resource efficient Europe, An agenda for new skills and job*) have actually backgrounds and underlying value propositions that have a lot in common with an industrial policy rationale. Notwithstanding this consistent effort, however, several criticisms were drawn by scholars and policy-makers for the inadequacy and superficiality with which the strategy pretends to address the issue regarding regional inclusion in the coordinated process of growth.

3.1 The Fifth Report on Cohesion: An Attempt to Improve Policy Comprehensiveness

By these circumstances, EU 2020 seems to follow suit Lisbon strategy in that it too easily overlooks the contextual and regional dimensions. This may be surprising to some extent, since the development of the strategy was founded on the successes and failures of past policy experience, and thus should in theory have prevented the repetition of an inappropriate approach. An even more advanced document proposed by the Commission on October 2011, accepted and ratified in 2013 by the Parliament, tried to reshape the architecture and clarify a detailed logic for the new cohesion policy agenda for the 'programming period' 2014-2021. This document, specifically the Fifth Report on cohesion *Investing in Europe's future*, is the first report including a commitment to territorial cohesion. With no surprise, the general approach adopted by the report closely reflects that implied by Europe 2020, which actually represents the hub from which the new document originated. Despite the fact that major elements of the proposed reform to cohesion policy remained intact, it is worth to mention some element whose consideration may be helpful in understanding the

whole picture of a modern development policy. In a first stance, as noticed above, we have to keep in mind that both the currently analysed report and any future policy frameworks, will operate under the umbrella of Europe 2020 agenda (EC, 2010): accordingly, the essence of the current and future policy line will absorb a multi-dimensional growth agenda and will consequentially prioritize policy favouring growth across a range of dimensions. This arrangement on a multi-dimensional and transversal growth trajectories requires greater coordination in terms of funding streams, challenge which is addressed within the report by the establishment of a Common Strategic Framework, CSF (EC 2012). This is intended to avoid an inefficient allocation of investments as experienced in the past with previous cohesion policy, by coordinating the range of funds devoted to regional development, i.e. Structural Funds. The program envisage the proposal of a menu of themes among which regions are allowed to choose, with an inclination for advanced regions towards implementing a skill and knowledge-related course of action and an orientation towards infrastructure-related investments for less advanced Central and Eastern European regions. This profile is particularly positive for it soundly accounts for the regional dimension, and through the CSF stimulates the design and deployment of integrated projects pursuing the redirection of different dimensions of development along the path planned by the Europe 2020 agenda. Moreover, an innovative introduction within the fifth report is the use of ex-ante conditionalities -whose lack in previous cohesion policy was identified as a major flaw in the Barca report-, tying not only the endowments but also the design, delivery and implementation of the policy to previously agreed arrangements, (McCann, Ortega-Argiles 2013). The use of conditionalities is assisted by the explicit disclosure of objectives, by the clear 'result-oriented' agenda (Gaffey, 2013), which helps assessing policy effectiveness and progress towards targets. This witnesses the emerging trend, shaping the new thinking behind modern industrial policy, following which project development and implementation should be constantly monitored and assessed so as to allow for real-time adjustments in case any relevant information emerges during the project development. This also entails the possibility of enjoying a learning process through project assessment, thus emphasizing projects as knowledge-generating exercises in their own rights. Recalling the added-value incorporated in cohesion policy in the form

of partnership, the fifth report takes this agenda-objective one step further: in that, it is intended to directly respond to the place-based logic of the reform, expecting Member States to sign an Investment and Development Partnership Agreement with the EC, (EC 2011). The spillovers expected from the added-value of partnership are intended to uphold a vertical and horizontal multi-level agenda – central in the place-based policy logic- and necessary to explain and clarify the role of different regional, local, private-sector and civil-society actors and institutions in the design and delivery of the programmes. Additionally, the policy reform also contains specific provisions accounting for issues related to urban areas and regional specificities. In the effort of trying to account for changes and developments within a dynamic environment, a new geographical logic led to the introduction of the category of ‘transition region’. These regions are identified as those which were awarded, received and used higher funds, and-after having reached their objectives- are still recipients of funding but to a lower extent. The underlying rationale here is that of ensuring the persistence of development momentum in well-performing regions and not to constrain it on the basis of mere cut-off rules. Furthermore, the document bisects the concern related to territorial dimensions into two focus areas: a first one dedicated to a reconsideration of urban areas and a second depicting core-periphery dynamics. Inherently, it is recognized that many EU cities and urban conglomerates displays a fundamental lack of governance flexibility and autonomy, along with the strong influence of complex societal challenges which confer urban agenda an overbearing importance. In a parallel, urban issues are emphasized on a global scale, acquiring a stronger international visibility, due to the role they play with respect to the challenge of economic growth, sustainability and governance. While coping with these issues, Europe has to face increasing complexity deriving from diverging regional dynamics within its countries in terms of both urban and economic growth. For instance, it is observed that since the turn of the Millennium, economic growth in Western Europe is shifting away from the larger core urban areas and is instead intensifying in non-core regions; on the contrary, in Central and Western Europe, the paradigm of strong growth in the core capital city regions still holds. Significant differences have surprisingly emerged at an aggregate European level, pointing at the increased

relevance of the growth share displayed in non-core regions in determining overall growth in the Union.

As suggested by several OECD publications (2004,2005,2007,2008), a multi-level governance framework, capable of fostering coordination among vertical and horizontal governance arenas, should be established. The resulting industrial policy will be more pro-active as stemming from an innovative 'matrix' approach combining both horizontal and vertical approaches with 'framework' conditions. The policy swift and the emerging new paradigm underpin "the tailoring of the provision of public goods to local conditions; the prioritization of different types of interventions in different contexts" (Rodrik, 2008); and the implementation of tools for appraisal and evaluation (i.e. Critical Assessment). Additionally, greater emphasis is placed on the capacity of local funding recipients to manage, channel and redirect resources autonomously, so as to acquire greater responsiveness and flexibility while carrying out the projects. The increased level of autonomy and flexibility in turn will be framed by the establishment of conditionalities, crucial for granting responsible and consistent processes and actions. Then, finally, maybe the most relevant insight provided by the report was its commitment in fostering the implementation of the *Smart specialization agenda*, whose intent was not that of encouraging sectoral specialization, but rather to promote diversification around a core set of activities and themes (McCann and Ortega-Argiles, 2013). The program's rationale consisted in discovering new paths along which exploiting the benefits deriving from knowledge networks and scale effects in those regional context provided with both well established capabilities and core competencies and the potential for diversification into related sectors, activities or technologies. The motives to prioritize this diversified approach to specialization came from the argument provided by the *Knowledge for Growth Expert Group*, which based their reasoning departing from the evident emergence from the 1990s onward of the 'transatlantic productivity gap'. The group recognized the reason for the outbreak of this spread in productivity mainly in the incapacity of EU industrial base to adopt and adapt to new technologies and innovations emerging in other sectors, (McCann and Ortega-Argiles, 2013). More concisely, Europe and most importantly European institutions failed in the transition from incremental to radical innovation imposed by the advent of the technological era. In this framework, Bachtler and

Gorzalak, question the adequacy of the attitude adopted by EU policy-making towards cohesion principles. They point to a fundamental flaw in the underlying philosophy sustaining cohesion policies, in that it is too much concerned with issues related to convergence, and thus tends to misunderstand and overlook the real impact of cohesion. The two scholars masterly express this concept as follows: “Maintaining such a direction in reforming Cohesion policy also calls for a reconsideration of the concept of cohesion. Arguably, cohesion should be understood in functional terms, and not as an effort to reach convergence. Convergence is an approximation of static states, whereas cohesion is dynamic by nature, being the opposite of entropy. Moreover, convergence is difficult to achieve, certainly with the limited resources available at EU level. Cohesion should be liberated from its ‘equalisation’ underpinnings and should be understood rather as harmony and collaboration (economy of flows), lack of destructive pressures and irresolvable conflicts, the possibility for co-existence and cooperation between individual components”. (Bachtler and Gorzelak 2007, 321) This statement clarifies the need for policy reforms pursuing cohesion to move beyond the simplistic idea of shifting the growth engine from high-growth core areas to backward lagging regions: the requirements needed to reach cohesion are much more comprehensive and transversal in their own right. However, any evaluation regarding policy effectiveness is entangled by the complexity of the policy nature per se. It avails, in fact, both Structural and Cohesion Funds, which are deployed under a common regulatory framework, but which aim to address different issues in varying national and regional circumstances backed by a heterogeneous institutional context to manage and deliver policy developments (Bachtler and Wren, 2006). This level of complexity strongly calls for a multi-level governance approach capable of integrating different dimensions. In this respect, however the suggestions implied by the Smart specialization approach are rather sound, and may result beneficial in fixing systemic weaknesses. The new orientation calls for “experimentalism in policy actions and interventions facilitated by governance innovations, in order to support the private-sector entrepreneurial and innovation processes, which fosters a process of self-discovery on the part of the public and private actors”(Hausmann and Rodrik, 2003). This approach advises also a remedy to the concern of territorial differences and specificities by connecting the smart specialization agenda coherently with the

regional context which it was designed for. In that, it highlights the role played by the embeddedness of activities in a region, the potential for exploiting related variety and the essential prerequisite of establishing connectivity both inter-regionally and intra-regionally between different firms and institutions (McCann and Ortega-Argiles, 2013). Accordingly the essence of this multi-dimensional growth agenda is not only to promote growth across a range of dimension, but also to establish connections through different layers implied in the process, acknowledging that performances, trade-offs, complementarities and compliance with the plan will vary according to specific regional context and capabilities. However, despite the efforts exerted in the development of upgraded, comprehensive and forward looking policy reforms, recently EU interventions have underestimated the territorial extent and were partially inhibited by the regional dimension. As a matter of fact, regional diversity lies at the core of EU incapacity to reach the expected policy goals. The next section will accordingly suggest an approach diversified on the basis of regional contexts, in the effort to provide a solution to the persistent gap arising between intended policy goals and actual delivered results.

3.2 Learning Economy and Different Knowledge-basis

What emerged so far, calls for the application of a 'place-based' view to regional policy. A way to close the gap between policy intention and actual policy outcome may be that of taking stock of different conditions and potentials, characterizing several Regional Innovation System (RIS hereafter), during the process of development of policy reform. However, in order to suggest some policy recommendation in this sense,-in a world in which the economy became largely globalised and where the most strategic asset confirms to be knowledge-, we need first to understand how knowledge has to be channelled and managed in order to generate growth. Even if theoretically the concepts of knowledge and innovation may entail different implications, in practical terms they are often used to express the same idea. The common approach provided by the literature, implies treating knowledge as the source for innovation; namely knowledge is seen as the enabler to reach higher competitiveness through innovation. Thus, in this view, innovation is considered as the ultimate driver of development of a

competitive advantage. Innovation then, is by its nature a dynamic and changing process, central engine of a learning economy, within which it is depicted as “an interactive learning process, which is socially embedded and culturally and institutionally contextualized” (Lundvall, 1992). This conceptualisation provides for a more dynamic approach to innovation including also sectors, firms-sizes and regions that can be considered innovative, to account for traditional, non R&D intensive branches. However, this position calls for a reconsideration about its potential for application: the learning economy approach is not suited, in fact, to an industry-wide application within sectors with highly varying levels of R&D intensity; this approach was in fact developed within the national boundaries of SMEs’ networks of industries, relying on incremental non R&D based product innovations. In recent times, however, we witnessed the emergence and blossoming of those clusters leaders in pioneering inventions and creating new knowledge, suggesting the importance of radical innovation. In this terms, in a long-run perspective, the availability of new knowledge sources will increasingly become a crucial determinant of competitive advantage. This concept is masterly sustained by Nonaka and Reinmoller (1998), which infer: ‘no matter how great the efficiency and speed of exogenous learning is, it will not substitute for endogenous creation of knowledge. The faster knowledge is absorbed, the greater the dependence on the sources of knowledge becomes’. Thus it seems to be reasonable to infer that both learning and knowledge generation should be considered and balanced as drivers to enhance competitiveness through innovation, rather than ultimate objectives in their own rights. Maskell et al (1998), strengthen the call for the pursuit of knowledge- led activities as the only factor of production not subjected to ubiquitification – i.e. the process of conventional production factors becoming more available across the world for the same price - is ‘sticky’, localised knowledge. This localised dimension of knowledge contributes to confer a fundamental importance to territorial agglomeration, which has a prime role in regional embedding of knowledge and learning process. It has been widely acknowledged in fact, that knowledge is nationally entrenched as much as it is regionally embedded as a consequence of a historically produced territorial division of labour (Asheim and Coenen, 2005). Localisation then, becomes increasingly important in explaining regional specialisation, and in accounting for the emergence of successful

territorial agglomerations. These clusters, however, may run into troubled situations due to path dependency and lock-in effects reducing their innovative capacity in rapidly changing environment. Numerous examples in this sense could be recalled (e.g. third Italy industrial clusters), witnessing the importance of fostering the development of the endogenous capacity of regions to innovate and established the so-called 'regional constructed advantage'. The process to follow in order to reach such a strategic dimension is not determined ex-ante, but rather is shaped by context, region, industry and firm's specific knowledge bases. Laestadius (1998), classifies knowledge base into two groups: 'analytic' and 'synthetic' knowledge base. Here, the distinction basically implies that analytical knowledge embodies scientific research and new knowledge creation, while synthetic entails the application or combination of already existing knowledge. The knowledge background typically determines the nature and characteristics of the industry: a broad differentiation defines R&D intensive industries as based on analytical knowledge, while those founded on a synthetic knowledge base usually pursue innovation through product and process developments. The combination of several factors (i.e. economic, demographic, political, cultural, historical) exerting their influence in the micro, meso and macro-environment contribute to trace the boundaries delimiting territorial phenomena taking the form of local innovative clusters and networks. Accordingly, with the aim of drawing some consistent (regional) policy recommendation, the next section will conceptualize the RIS definition and provide a punctual characterization of the existing type of RIS.

3.3 Characterizing Different Regional Innovation Systems

The growth oriented line of policy characterizing EC's intervention recently cannot leave apart a focus on innovation, and as a matter of fact, the latter posits the basis over which EU's strategy aims to build growth momentum. However more effectively, further emphasis should be placed on the identification of elements about the nature and functioning of specific innovation systems, so as to acquire insights on regional system innovation enablers and barriers. Generally, a RIS is depicted as the institutional infrastructure sustaining the production structure within a region. An innovation system is accordingly conducive for innovation when there is constant and deliberate interaction between its two constituencies. When the regional production structure, or knowledge exploitation subsystem, interacts and co-ordinately operates with the regional supportive infrastructure, or knowledge generation subsystem (consisting of private and public research laboratories, universities, technology transfer agencies, etc.), it said that a RIS is in place. The regional dimension underscores the importance of the level of governance of the economic processes between the national and the local level: in this sense, regions are crucial catalysts of economic coordination in the meso-environment, despite the fact that regional-administration level can vary greatly across countries. RIS very often show a systemic dimension, in that they tend to be characterized by an associational orientation of the components of their networks. As interaction within these components increases and intensifies, these relations become systemic and many of them regionally contained. Accordingly, as the process of interaction triggers boosts in innovation, these systemic relations become critical and are all drawn into the regional context. This is a dynamic that can be observed for instance in networks of suppliers operating in technology-specific or knowledge based intensive sectors. These suppliers operate in a double perspective: they hold a regional point of view in their face-to-face interactions and trust-based relations through which they channel tacit knowledge; and they simultaneously hold a international perspective by sourcing capacity subcontractors globally. Moreover another factor contributing to the emergence of systemic character for regions is their sharing of a common set of values, norms and attitudes determining a 'regional culture', which in turn, results in the way in which different entities interact within the region. From this configuration stems the need to concentrate increasingly on

interactions between local entities and on interdependencies between regions and nations, holding as leading criteria the location of core activities and the relative importance of their connections to regional knowledge infrastructures (Asheim and Coenen, 2005). However, the argument that sustains that production configurations are often shaped by developments coming from outside the actual context –thus jeopardizing their effectiveness and adequacy- supports the evidence of a Europe in which region formation ‘has and continues to be evolved apace’ (Cook, in press). Despite this observation, and additional research results indicating the insufficiency of a regional level approach to stay innovative and competitive, a European comparative cluster survey by Isaksen (2005), confirms the continuous prominence of the regional level and of the related RIS. Asheim (1998), in the effort to account for several differences in the production structure and institutional set-up in a region, distinguishes three types of RISs. The first kind is denoted as *territorially embedded regional innovation systems*, where firms organize their innovation-oriented activities around networks and inter firm interactions and learning processes. These networks of SMEs in industrial districts (such as those in Italy’s Veneto, Agordino and Cadore Valley), try to exploit advantageously their geographical and relational proximity, without directly connecting to knowledge creating organizations. These territorially embedded systems provide bottom-up, network-based support to stimulate ‘adaptive technological and organizational learning in territorial context’ (Storper and Scott, 1995). As for the second type of RIS, it consists of the *regionally networked innovation system*. Firms and organization in this context are similarly embedded regionally and characterized by localised, interactive learning. Within these systems, however, a sound institutional infrastructure provides a structured arrangement involving public-private co-operation. This networked system- typical paradigm of the network approach mainly observable in Germany, Denmark, Austria and in the Nordic countries- is usually considered as the optimal RIS, consisting of local cluster of firms surrounded by a regional ‘supporting’ institutional infrastructure (Asheim, 2005). The development of European policy reforms in this sense could consistently benefit from insights provided by this systems, as they are the successful result of policy interventions intended to boost innovation and co-operative capacity. In this perspective, these networks are strategically important as they allow, for instance,

SMEs to supplement their informal knowledge with competence arising from more systemic R&D results in order to generate more radical innovation. The key-point to underline here, is to acknowledge that in the long-run, most organizations cannot rely only on informal, localised learning, but need an access to a wider pool consisting of both analytical and synthetic knowledge on a national and global basis. Accordingly, fostering the creation of technology transfer agencies and strengthening industry-university links, could be helpful in providing knowledge to supplement current organizations' competencies and to deter the occurrence of technological 'lock-in'. Finally, the third type of RIS, the *regionalised national innovation system*, fundamentally differs from the ones previously described. In a first stance, this kind of arrangement takes on the form of a national or international innovation system, in that it functionally integrates parts of industries with institutional infrastructure. This peculiarity recalls a rather top-down approach, where innovative activities and paths are developed by actors operating outside the region, and results in a model in which exogenous entities and relationships play a major role. Secondly, this system differs from the others in the way co-operation among actors takes place: it implies, in fact, a rather linear model of co-operation encompassing the development of ad-hoc projects, framed in analytical-scientific context, aimed at increasing the potential for the creation of radical innovation. Within this system, it is likely that co-operation arises mainly on the basis of functional similarities -thus linking people sharing the same occupation or knowledge background- which enables the knowledge sharing practice to cross inter-regional and even international boundaries (Amin and Cohendet, 2003; Coenen et al., 2004). This type of RIS, often materializes in the form of clustering of R&D laboratories of large firms or governmental research agencies giving birth to planned 'science parks', as in the cases of technopoles developed in France, Japan and Taiwan. A fundamental deficiency of this innovative milieu is the lack of consistency between the high level of internal resources and competencies of firms within the cluster and the structural weakness in co-operative terms of the surrounding environment. This observation further strengthen the argument about the relevancy of regional embeddedness and the degree of contextual 'fit' of policy interventions, when pursuing regional development.

Now, having investigated how different knowledge bases and knowledge sources can be combined and orchestrated to produce different kind of regional knowledge networks, -generating in turn, different type of innovations- we shall move our spectrum of research on the impact that knowledge endowments can have on aggregate, economy-wide and individual welfare growth performance. Accordingly, our aim is to uncover whether skilfulness or expertise (used as a proxy for knowledge intensity) has significance in determining growth at a micro and macro level. In this sense, we will investigate how varying skill endowments may lead to shifts in the wage structure of international labour markets and to improvements in national productivity. The resulting argument will then be exploited to produce some policy recommendation.

CHAPTER IV

4. Does Higher Knowledge Entail Higher Growth? Evidences About the Effect of SBTC on Wage Inequalities and Aggregate Output Growth

The policy paradigm developed so far throughout the paper, suggests the adoption of a policy-line consistent with the imperatives superimposed by the current 'knowledge-era'. By the same end, the analysis stresses the compelling need to distinguish between different kinds of knowledge arising in different contexts and deploying their effects in the form of radical or incremental innovation. In this sense, the importance of favouring the establishment of a system conducive for the formation of learning economies and knowledge flows has already been convincingly acknowledged; however, an analysis questioning actual evidences of the role of knowledge in stimulating growth shall be carried out in order to further strengthen our thesis. A preliminary perspective that can be assumed to investigate this argument could be that of assessing the impact of a higher education attainment or higher skill level in determining individual's wage level. Accordingly, we are assuming here, that skilfulness works as a proxy for knowledge endowment. An ample body of literature has been concerned with the issue of trying to clarify whether Skill Biased Technical Change (SBTC, hereafter) has an effect in determining shifts in the wage structure composition. Specifically, SBTC, consists of the hypothesis maintaining that bursts of new technologies cause the demand for highly skilled workers to increase, and this in turn leads to a widening in wage inequalities. Several research efforts have questioned and discussed this hypothesis providing differing and enriching insights. An interesting work encompassing this issue, was provided by David Card and John E. DiNardo (2002), which developed an analytical model through which they tried to investigate whether computer-related technological change could produce a widening of wage differentials among high-skilled (computer users) and low skilled (computer non-users) employees. The theoretical framework is based on the analysis of data referring to the U.S. labour market structure, accounting for its evolution over the three decades from the 1970s to the turn of the Millennium. Their findings differ from the traditional literature

perspective on the topic, as they surprisingly conclude that there is a weak evidence linking rising wage inequalities to skill biased technical change. The econometric model implemented to unveil this question, partially refutes explanations in favour of SBTC. In fact, although SBTC successfully justifies wage gap widening until the end of 1980s, it falls short in explaining why increasing wage inequalities ceased to exist in the 1990s despite the continuing development of technology. In contrast with these findings opposite evidences are supported by John Van Reenen and Stephen Machin. They provide a consistent survey, founded on newly constructed industry level database, against which they contrast the experiences of seven OECD countries with respect to the effects of SBTC. Specifically these countries are U.S., UK, Denmark, Sweden, France, Germany and Japan, and the analysis shows similar results – i.e. the relevance of skill complementarities- across all of them. The data used in this investigation are drawn from a variety of industries and individual level data sources (OECD STAN Database, United Nations General Industrial Statistics Database, OECD Bilateral Trade Database, OECD OFBERD, Individual Level Data-sources), with the aim of matching data from a number of sources and at different levels of industry disaggregation (John Van Reenen and Stephen Machin). According to econometric analysis of these databases, similar shifts in the structure of labour market favouring high skilled workers, seem to arise across all the seven countries researched. These shifts were mainly observable within rather between industries, thus suggesting that new technological introductions influenced primarily skill-related industrial sectors. Moreover additional evidences witness the degree of complementarity of human capital with new technologies thus strengthening the hypothesis for SBTC. Inherently, thus, technical change is somehow related to the degree of R&D intensity, which is shown to increase the labour market demand for skills as confirmed by the rising level of investment in 1980s in research-related activities in all the seven countries. The survey provides also enriching insights about alternative explanations accounting for this wage polarization, and in particular it is able to detect the declining influence and role (especially in U.S. and UK) of labour market institutions. The weakening of these institutions to set wages, to manage the training system and to reduce the power of firms to lay off unskilled employees, is likely to impact consistently wage structure and employment. Overall, the evidences this study supports are diametrically opposite to

those provided by David Card and John E. DiNardo (2002), in that they sustain the relevancy of technological changes in rising wage inequality, and in particular in increasing the wages' high end potential. This effect can be translated into the capacity of technological change to increase the stock of wealth available at an individual and sectoral level. This consideration thus, results pertinent to the previously developed argumentation about the ability of technologically advanced territorial agglomeration (RIS) to produce superior growth. Consequently, acknowledging the effective positive results that an increased stock of knowledge (represented here by higher skills and expertise) has over income maximization, posits important arguments in favour of the thesis sustaining the need to account for RIS enhancement in the process of policy development. An interesting and rather challenging task, many economists since the 1980s onwards have been "trapped" with, was to show whether and how technical change (i.e. innovation) could determine rising productivity level and thus aggregate economic growth. A definitive answer to this is not available still due to the complexity and variety of implications that analytical models -trying to shed light on this issue- implicitly preserve. Economists began by acknowledging the role of human capital, described as the production ability acquired through education, in determining growth. Accordingly, Lucas (1988) provides the first human capital approach to endogenous growth: in this perspective, human capital (or to connect with the previously used vocabulary, skill and expertise) is depicted as the trigger raising the productivity of both labour and physical capital. To a certain extent, this clue was also uncovered in the above mentioned work by David Card and John E. DiNardo (2002), which recognized the clearly accountable impact that the outburst in technological innovation have had in shaping above-average trend of output growth in the last decade of the 20th century. In a parallel, throughout the 1990s a rich body of seminal researches confirmed the positive effects of education over expected future income, as described by the Galor-Zeira model (1993), which tested this hypothesis over samples of tens of thousands observations. Additional insights are provided by parallel theories such as the one of Romer (1986, 1990), Grossman and Helpman (1991), the 'theories of inventions'. One enlightening implication of Romer's work (1990), is that inventions, in their broader form of knowledge creation and innovation, are affected by the overall level of knowledge in the economy and by the intensity of the R&D

sectors. This uncovered association between available knowledge stock and potential for innovation (and consequently growth), further strengthen the need to stimulate and protect, through policy interventions, those knowledge creating hubs which emerge in the form of Regional Innovation Systems; exploiting their richness in terms of knowledge asset, is thus essential to enhance a learning economy which “stands on the shoulders of giants” (Newton, 1676).

CONCLUDING REMARKS

This paper aims at assessing the coherence and adequacy of the recently developed European Industrial Policy within the framework set by the EU 2020 Strategy. The policy background against which the strategy was developed is profusely deepened in the section regarding the *Literature review*, and underscores the emergence of a new policy philosophy. This materializes in a paradigmatic shift from a 'traditional' approach to regional policy, originating in Keynesian doctrine and state interventionism in a resource-based economy, to a new knowledge-based attitude in a knowledge-based economy. The emerging 'economy of flows' is the one shaping the current context, where the crucial role is not played anymore by geographic stock of resources, but rather by the flows (of resources) of goods, people, capital and especially information. Accordingly, we tried to appraise whether the EU 2020 strategy is able to interpret the new imperatives imposed by the knowledge era, where countries will only succeed in gaining a lasting and sustainable competitive advantage if they are able to innovate on a steady basis. With this aim, we firstly contextualised the challenging background, with which the strategy has to cope, characterized by epochal changes concerning the economic, political, demographic and environmental contexts. Evident differences emerged in Member States' responses to the repercussions of the recent financial melt-down, with some countries faring better over time and other which still tend to show a sluggish recovery. These differences in reactions reflect indeed fundamental national disparities in terms of economic stability and political orientation. Differences can be traced between Member States also when evaluating, at the current date, their adherence to targets and compliance with directives set by the EU 2020 Strategy four years earlier. For this reason, we particularly strived to emphasize, the need for a reconsideration of the strategy to enable it to account more effectively for national and regional disparities. The latter are indeed, the first cause of the inability of previous policy efforts in realizing the expected results. Accordingly, in order to definitely close the gap arising between policy intention and policy outcome, greater emphasis should be placed over the coherence and pertinence of policy formulation in a first stance, and in addition, supervision during policy implementation and ex-post evaluation should be exerted. Notwithstanding these objections, it is arguable that overall, EU 2020 Strategy and in

particular the agenda 'Industrial policy for a globalisation era' is on the right track. Specifically, the agenda appears structured and comprehensive; it focuses on elements that are crucial in the current knowledge-based economy. It embodies innovation and knowledge as the drivers to lead the overall European economic system to a revival. This is coherent with the fact that Europe's economic difficulties have coincided with the ICT revolution and the opportunities it affords to economies with a comparative advantage in pioneering innovation. This change in fortune goes in a parallel with the transition from an extensive to intensive growth. Europe could grow quickly in preceding periods because the institutions it inherited and developed were all well suited for importing technologies, maintaining high level of investment and transferring large amount of labour from agriculture to industry. However, the scope for further growth on this basis was exhausted, and now Europe has to cope with current challenges and exploit inherent opportunities. The emphasis given, within the latest EC's documents and reports, to issues such as fostering knowledge through ad-hoc regional policies accounting for regional knowledge embeddedness and local networks of SMEs, signals the awareness of the need to implement a radical change. This advocated change essentially consists in an attempt to solve the coordination problem hindering reforms and to overcome institutional inertia. The vested interests that develop around existing institutions are a source of resistance to change. In this context, an additional issue that could arise is that of the first mover problem, as whatever entity goes first, it will experience falling productivity and welfare until others undertake complementary reforms. Nevertheless, throughout the paper we highlighted the fundamental importance for the EU to adapt its socio-economic model to the imperative of the day, i.e. the emergence of the 'learning economy'. Accordingly, we suggested the implementation of policies able to enhance regional, national and international coordination and co-operation to exploit complementary knowledge endowments. We also advocated for reconsideration of Regional Innovation Systems and of their role as fabrics of innovation and hubs of growth. To conclude, European growth is likely to be disappointing in the short-run since it will have to adapt the entire constellation of complementary institutions to the knowledge-era conditions. However, for what concerns the long-run, it seems reasonable to argue that Europe is likely to rejoin a sustained growth path and higher

competitiveness, since the basic foundations on which competitiveness depends -a numerate, literate and well-trained labour force, sound corporate governance, effective competition policy, effective supervision and regulation, and stable macroeconomic policies- remain in place. In the light of what observed and asserted so far, what can be said is that the new strategy's profile and rationale seem well balanced to account for European heterogeneity and to promote a smart growth based on knowledge and innovation. However, the ultimate success of EU 2020 will depend critically on EU's Institutions, Member States and regions capacity to adapt to the advocated change of the European socio-economic model.

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