

Industrial Policy after the Crisis: the Case of the Emilia-Romagna Region in Italy

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Abstract

In this paper, we discuss regional industrial development policy with reference to the case of the Emilia-Romagna region in Italy. We chose this region because it has been a model of diffused industrialisation and flexible specialisation, where industrial development is intimately linked to the civil society and social norms and values. This model has been much discussed in the 1980s. What is interesting is that the region is still a model today, discussed in the literature on regional innovation and regional development, as a knowledge-based society and economy. We argue that industrial policy has played and is still playing a very important role in the region. Whereas industrial districts still exist in the region, the industrial development policy has not consisted in desperately maintaining old industrial structures but rather at their upgrading through technology transfer, together with the development of new industries. The regional government has involved interested parties, mainly firms and industry associations but also other stakeholders such as universities, in order to define a shared vision of long-term economic development and appropriate instruments geared to it, constantly ensuring consensus. We show that the relatively good performance of the ER region in terms of economic and social development can be attributed to a large extent to the industrial policies that have been implemented since the 1980s. These policies have tried to anticipate changes in the industrial structure and have provided the appropriate gears towards sustainable development paths.

Keywords: industrial policy, long-term economic development, Emilia-Romagna region

JEL codes: O25; R11; R58

1. Introduction

The aim of this paper is to apply a framework for industrial policy decision-making we have realised on the basis of a reflection in industrial policy after the crisis (Bianchi and Labory, 2011, forthcoming), to the case of the Emilia-Romagna (ER) region in Italy. Very briefly, our starting point is that the crisis is primarily due to the inadequacy of a regulation model that led to many ungovernable tensions, because of the belief in a market that could resolve, on its own, all problems linked to trade opening and international political integration. The tensions were low wages and high debt in the US; an excessive boom in the financial sector no longer related to the real sphere of the economy; the emergence of new powers and the end of bipolarism in international relations.

These tensions became acute due to the deep structural changes occurring as a result of globalisation: competition has intensified world-wide leading to a rise in the knowledge content of production processes and changes in production organisation, hence the division of labour that determines firms' competitiveness. Business have called for a renewal of industrial policies in the end of the 1990s, spurring in academia and policy-making circles a debate on the desirability and adequate forms of industrial policy.¹ According to us, the crisis has confirmed the need for industrial policy and made this debate even more useful.

In this paper, we explain our framework for industrial policy decision-making and we apply it to regional industrial development policies, focusing on the case of the Emilia-Romagna region in Italy. We chose this region because it has been a model of diffused industrialisation and flexible specialisation, where industrial development is intimately linked to the civil society and social norms and values. This model has been much discussed in the 1980s. What is interesting is that the region is still a model today, but a different one. The literature on regional innovation and regional development indeed present ER as a regional innovation system (for instance, Cooke, 2001). We argue that industrial policy has played and is still playing a very important role in the region. The

¹ See for instance the special issue of the International Journal of Applied Economics (Cowling, 2006); the various contributions in Bianchi and Labory (2006).

regional government has indeed involved interested parties, mainly firms and industry associations but also other stakeholders such as universities, in order to define a shared vision of long-term economic development and appropriate instruments geared to it, constantly ensuring consensus. Networking between the different interested parties has therefore always been stressed, thereby allowing the development of a regional innovation system.

The ER industrial policy is holistic, considering the different regional production systems as parts of a whole which development requires the coherent evolution of all its parts.

In this paper, we define industrial policy in a broad manner as all actions aiming at favouring the restructuring of industry and the development of new industry (as in Bianchi and Labory, 2006; Cimoli et al., 2009, adopt a similarly broad definition). Our view is therefore neither narrow nor specific: industrial policy is not just state aid or R&D policy, it is a set of actions supported by instruments that aim at favouring particular development paths. It is dynamic and, as in Bailey et al. (2010a), holistic, in the sense of considering both demand and supply side factors and both micro and macroeconomic factors. Industrial policy is also pro-active, in that policy-makers try to anticipate changes in order to favour the adaptation of the production system. Policy helps change, providing a context favourable to adaptation (providing resources and entitlements, as we will argue in this paper), but does not substitute private decision-makers.

Whereas discussions of industrial policy have so far tended to essentially discuss the availability of instruments and their possible mix in different policy fields of industrial policy (research and innovation; competition and regulation; SMEs; ...) (Bianchi and Labory, 2006), we argue that what is essential in the globalised, post-crisis world is to define industrial policy taking account of all parameters influencing development, ensuring the sustainability of the development path induced by the policy choice, and ensuring the complementarity or coherence of actions taken at different levels of government.

We develop a framework for industrial policy decision in the form of a sundial representing the different parameters that policy decision-making should account for. The paper is structured as follows. The second section reviews the structural changes that have been affecting industry in the last decades and to which the crisis has revealed a lack of adjustment of industry. The third section explains the sundial of industrial policy. The fourth section applies the framework to the case of the Emilia-Romagna region in Italy. Sections 2 and 3 are based on Bianchi and Labory (2011), although with some extensions, while section 4 is based on own research and experience.

2. Deep structural changes of globalisation: the great unbundling

We consider globalisation as an intensification of world- wide trade in goods and services. The greatest structural change implied by globalisation probably is the setting up of global production processes, whereby different phases of production are realised in different countries. Baldwin (2006) calls this the ‘great unbundling’. The new production processes have been analysed either as global value chains (GVC) or global production networks (GPN). The global value chains literature (Gereffi, 1994; Sturgeon, 2008) primarily examines the governance structure of the global production processes and views GVCs as sets of interorganisational networks along the production process of particular commodity or product.

The GPN literature implicitly considers the “social processes involved in producing goods and services and reproducing knowledge, capital and labour power” (Dicken, 2001, p. 16). As we will show below, social processes involved in production should be explicitly considered in order to define sustainable industrial policies. In other words, the division of labour and its relation to and implications for firms’ strategies and performance becomes a key research issue.

The territory also takes renewed importance: production processes are global but made of different locations in different territories where they have an impact. As Dicken puts it (2001, p. 18), “An understanding of the ‘territoriality’ of production networks – namely, how they constitute and are re-constituted by the economic, social and political

arrangements of the places they inhabit – is central to an analysis of the prospects for development at the local level”.

Bailey et al. (2010b) also stress the importance of both the ‘territoriality’ of production networks and the current changes that territories, especially in mature regions, are undergoing as a result of globalisation. These authors develop the concept of ‘place leadership’ as deriving from embedded skills, knowledge and cumulative learning and allowing regional institutions to identify sustainable growth trajectories.

Production organisation and the resulting division of labour means designing and creating organisational processes aimed at transforming tangible and intangible inputs into final products. As explained by Adam Smith in the *Wealth of Nations* (1776), these processes are realised by applying knowledge, capabilities and intelligence to production processes and result in the production of value. Production organisation is determined by the firm’s characteristics, its internal and external environments, social and political institutions, the extent of the market and products requirements. In turn, production organisation has implications on the social, economic and political characteristics of the economic system in which the firm is embedded. In other words, the division of labour determines the productivity of labour, but it also determines working conditions and the living standards of workers, hence their access to education and to cultural development. Inventions and technical progress in turn depend on the culture and knowledge that originate from experience. It is in this respect that industrial policy has to be determined in a holistic approach: industrial development is determined by and in turn influences the characteristics and evolution of the society and its cultural development. Hence industrial development policies must take account not only of available resources and technologies, but also of the social characteristics of the territory, the training of human resources that simultaneously determine social and economic evolution. We represent this in a framework for the definition of industrial policies, a “sundial” of industrial development.

3. Consequences for industrial development policies

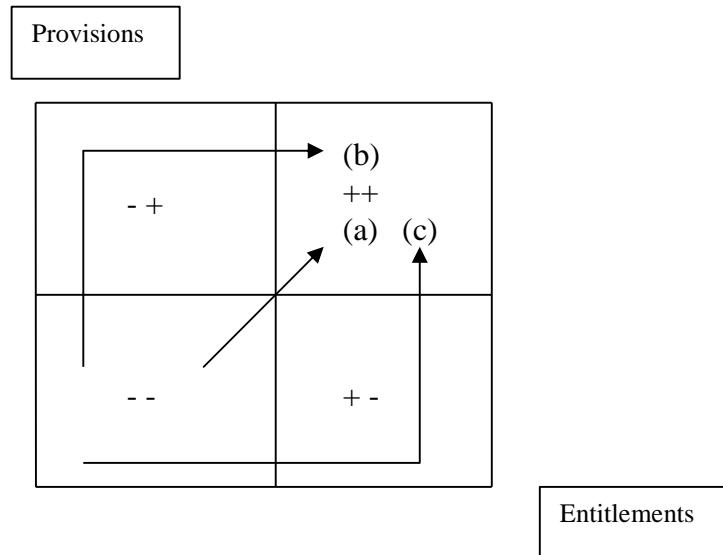
Provisions and entitlements

In order to develop our framework, we use the concept of entitlements and provisions developed by Dahrendorf (1988, reedited in 2008). Entitlements are socially defined means of access, namely not only the capability of buying goods and finding a job, but also non-economic commodities such as the right to vote and the right to be educated: there are civil rights (basic elements of the rule of law, equality before the law), social rights (universal right to real income) and political rights (suffrage, freedom of association, freedom of speech). Entitlements open up choices in our commodity purchase; the set of such choices are called ‘provisions’ by Dahrendorf. Provisions are thus essentially resources, tangible and intangible capital and their transformation into goods and services. Both provisions and entitlements are determinants of development, since they determine the available resources and the capabilities of individuals to use these resources in order to create value.

As we argue in our book (Bianchi and Labory, 2011), countries have different trajectories of industrial development according to their set of provisions and entitlements.

Some countries have levels of provisions and entitlements generating a balanced path of industrial development (case a in Figure 1), which is the path chosen by the European Union in the economic integration process. Some have high levels of provisions but low levels of entitlements (case b), which is the case of China. Others have low levels of provisions but high levels of entitlements (figure c), which is for instance the case of South Africa.

Figure 1. The relationship between provisions and entitlements



Source: Bianchi and Labory (forthcoming)

Globalisation and the diffusion of global production networks imply the need for firms in any territory to develop international relations, in order to govern GPN themselves or to take part in GPN governed by external leaders. New provisions are required for firms to be able to do this (knowledge, communication infrastructure, etc.), as well as new entitlement (in particular, ability and power to relate to people and institutions in other territories and countries). Hence the importance of the territory, discussed in the next sub-section.

The importance of the territory

Baldwin (2006) argues that the setting up of production systems on global scales lead to tasks specialisation rather than sectoral specialisation. Competition therefore primarily arises between tasks rather than between firms or sectors, and the territory takes on increasing importance. In this context, territories should not be intended as simple administrative units but as places where values and distinctive competencies and skills

can be intensified, due to their being territorially defined social aggregations with economic and political structures (Lovering, 1999).

Task specialisation depends on the availability of both tangible and intangible assets in the local territory. Human capital constantly interacts with knowledge to create new knowledge and other intangible resources, in dynamic learning processes. These processes primarily arise at local level, but can also be enriched by external relationships, be they with other regions in the same country or with regions in other countries. Hence task specialisation, primarily determined by the competencies a territory has put together, is more the consequence of a resource creation process than of an initial endowment. Task specialisation primarily arises at regional level because it is the level at which certain types of relations arise more easily and densely, knowledge externalities are more dense and some resources are deeply rooted (human capital in particular).

An important question regarding task specialisation is where is competence embedded. A region may specialise in specific tasks because the competencies underlying these tasks are held by and controlled by the regional firms. The firm or firms in this case determine(s) the specialisation of the territory. The development of the territory then depends on the firm and is vulnerable to the firm's strategic decisions, especially if firms located in the region are foreign-owned and may more easily decide to relocate production phases to other territories as conditions change.

In contrast, the competencies underlying a region's task specialisation may lie in the specific knowledge and interaction processes built through time among different individuals and institutions of the region, in which case the region is not vulnerable to firms' sudden decision to move to other locations.

According to Coe et al. (2004), regional institutions can favour the 'strategic coupling' of regional firms with external lead firms by stimulating processes of value creation (providing appropriate training of human capital; promoting start-up firms, etc.), enhancement (technological and knowledge transfer) and capture, at different levels of government: local or territorial, regional, or national, each level acting in complementary way to the other levels.

GPNs indeed raise the issue of power and governance in networks. The diffusion of GPNs implies the consolidation of large transnational players that manage global production networks and have a strong power to constraint territorial firms in their choices. In other words, they can reduce the freedom of the firms participating in their networks by making their survival dependent upon their strategic decisions. Bailey and De Ruiter (2007) calls this a 'strategic failure' and argue that such failure could be reduced or eliminated by monitoring the behaviour of transnational firms. Monitoring large transnational firms leaders of GPNs could guarantee the negative freedom of territorial players. However, the positive freedom of territorial firms must also be guaranteed. Positive freedom indeed is the right to, the ability to be somebody or to do. Sen's concept of capability stresses the importance of positive freedom, namely the ability to be or to do, in economic development, and is according to us what Dahrendorf means by entitlements. The ability to be or to do is developed by ensuring entitlements, namely measures ensuring the participation of many actors in strategic decision-making. For this purpose, knowledge and people are essential: access to knowledge produced elsewhere in the world, absorptive capacity to integrate this knowledge; people because knowledge diffuses and is created only through the interaction of people with different and complementary knowledge bases and competencies.

There is a role for government policy at different levels (regional, national and supranational) in order to promote task specialisation at regional level. The regional level is more appropriate to identify possible synergies and possible competencies to develop locally, because of its better knowledge of both local actors and local knowledge. It can contribute to providing local actors with entitlements, making them able to relate with other actors within and outside the region. In a globalised world, the ability to develop links outside the regions is fundamental.

The national level has a role in providing resources (depending on the degree of decentralisation) and favouring interregional exchanges and synergies when different regions specialising in complementary competencies. The supranational level has a role for instance in regulating global trade or favouring the sharing of experiences between regions in different countries, as well as supporting the development of particularly

backward regions, as in the Union. More importantly, the national and international policy level could have a role in monitoring global actors, avoiding abuse of dominant position, as suggested by Bailey and De Ruiter (2007).

Not only therefore is it important to take account of both entitlements and provisions to favour development, it is also important to coordinate efforts at different levels of government. This is what the framework for industrial development policy-making presented in the next section attempts to illustrate.

A development sundial

We therefore summarise our holistic view of industrial policy building a framework based on four pillars.

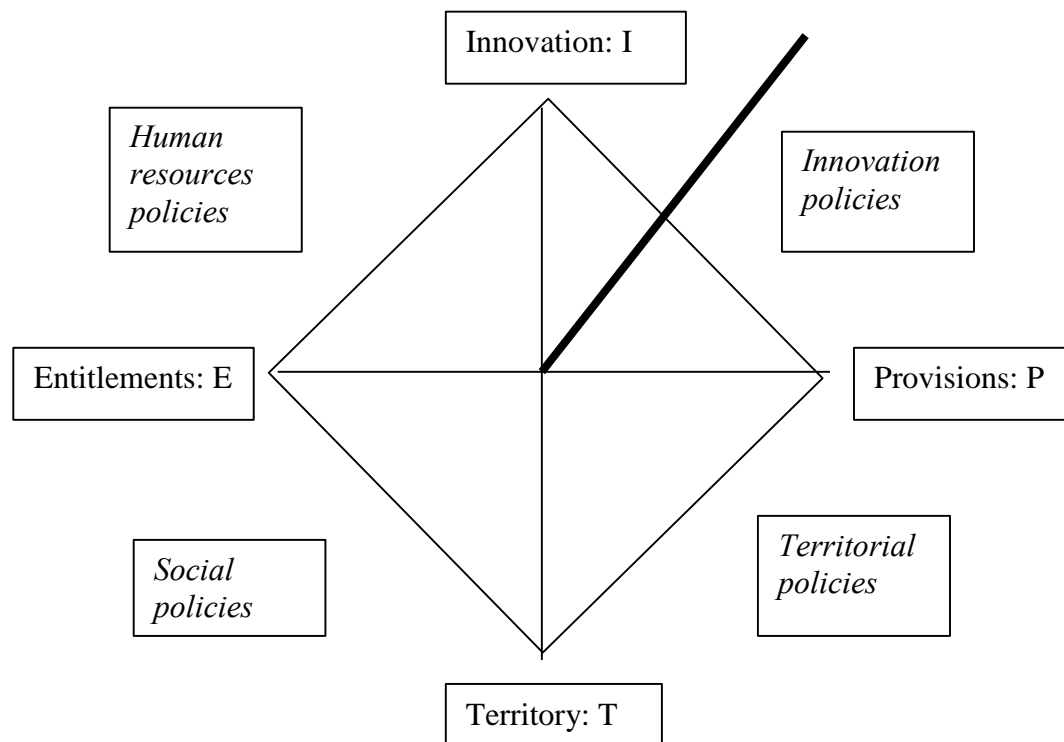
Entitlements determine the rights or capabilities of individuals to take part in development as well as in productive and competitive processes; provisions determine the resources available for these processes to develop. Innovation is the capacity to create and maintain learning mechanisms that can be applied to production processes, hence an element that directly contributes to the dynamics of the development process. The territory is where task specialisation primarily arises, although not in isolation from the rest of the country nor from abroad, because productive processes are at least initially embedded in territories.

All four levers or gears to industrial development can be represented as in figure 2. Sustainable industrial policy should aim at extending all four levers, which are complementary and not substitute. Sustainable industrial policy also requires coherent actions at the different levels of government, namely regional, national and supranational. The levels of government are represented by the fifth dimension of the picture, namely the bold line, thereby obtaining a sundial.

The areas covered by the sundial represent different policy focus. The North-Eastern area corresponds to innovation policies, where innovation (or rather knowledge and knowledge creation) and provisions have to be extended and directed in appropriate ways. The South-Eastern area is that of territorial policy, providing resources (infrastructure and capital) in the territory. The South-Western area is that of social

policies, ensuring entitlements in the territory, while the North-Western area is that of human resources policies, enhancing knowledge and competencies (the innovation axe) in order to raise the capability of individuals to take part in production processes.

Figure 2. Four levers of industrial development



Source: Bianchi and Labory (forthcoming).

A territory's social structure, economic organisation and institutional governance determine the development of certain competencies at regional level that lead to specific task specialisation. Specific instruments have to be designed in order to orientate or even change this task specialisation; some instruments successfully used elsewhere may be used, but they have to be geared to the territory's characteristics.

A holistic approach means taking account of the whole of which the particular policy problem is part, in a dynamic way. The whole forms a system determined by different

forces that orientate its development. If certain forces produce non desirable results, such as social exclusion, instruments must be implemented to change these forces and guide development on the desirable path.

Therefore, it is increasingly important for regions to be able to favour synergies at local level so that task specialisation can occur, and be able to adapt to changing circumstances, but at the same time to develop their capacity to create relations elsewhere in the world, so that the local industry can become part of or govern global value chains.

This representation of industrial policy after the crisis highlights that policies require adequate politics and coherent polities, namely visions of the future and social structures that are able to sustain its growth through time. Some cases of rapid growth paths have occurred in the past, but generally miracles also rapidly exhaust, because an unbalanced growth generates negative effects on the social structure (as in the case of Ireland discussed in Bianchi and Labory, 2011).

This framework may appear so general that we can conclude that any industrial policy is fine, whatever the chosen path, the important thing being that it is coherent. This is not correct, since diverse long-term development paths can be chosen, but they have to consider all the dimensions outlined in the sundial, even if they may favour some of them.

The path chosen and implemented by industrial policy may not be actually reached, but the important point is that it defines a policy process that activates different gears towards particular, consensually defined objectives of development. This can be related to the notion of path dependence discussed in the literature. In particular, Martin and Sunley (2006, p. 403) argue that “the past sets the possibilities, while the present controls what possibility is to be explored”. A region may contain different path dependence processes, that may be interrelated or not, according to the evolution of the diverse local production systems it is made of. The question for policy is to identify possible development path on the basis of the current situation of the regional system and its historical evolution, which identifies its distinctive competencies, the current resources and entitlements and the desirable new developments. Focusing on single

firms or industries is likely not to be effective since the regional system is made of different parts and the synergic effects they produce together. Some effects only emerge at system-wide level (Metcalf et al., 2006), and regional industrial policy should aim at potentiating these system-wide effects. The case of the Emilia-Romagna region is precisely one where regional industrial policy has attempted to potentiate these system-wide effects, as shown in the next section.

4. The excellence of the Emilia-Romagna region and the limits of the Italian system

The Emilia-Romagna region in Italy illustrates a case in which the policy adopted at regional level appears to be efficient and effective. The region has benefited from EU programmes and has used structural funds to spur regional development, although a lack of strategy and appropriate actions has emerged at national level (Labory and Prodi, 2010).

Difficulties at national level

The Italian productive system has adjusted to the crises since the 1970s by fragmenting and adopting flexible organisations such as industrial districts, which advantages have been much discussed in the literature but which are experiencing problems to adapt to globalisation. Competitive weapons such as devaluations were also extensively used before the entry into the European Monetary Union. As a result, the Italian productive structure is characterised by a few large firms and numerous small and very small firms. Some medium firms are consolidating but they represent only about 10% of the total firms.

The crisis has induced even more fragmentation. According to the Italian Central Bank, Banca d'Italia, only about 54% of Italian manufacturing firms had restructured before the crisis. The restructured firms have suffered less from the crisis, in terms of output reduction (Banca d'Italia, 2010).

The Italian productive system is already weak when it faces the 2008 crisis. Thus Italian firms' shares of the world market has been decreasing since the mid-1990s, and export growth has reduced (Table 1).

Table 1. Real growth trade of goods and services, Italy (% change)

	1995-99	2000-04	2005-08	2008
Exports	4.2	2.9	2.1	-3.7
Imports	6.5	3.4	2.0	-4.5
Goods	4.5	1.5	2.7	-3.2
Services	2.3	1.6	3.7	-1.0
Goods share of exports (%)	79.0	80.8	81.2	81.6
FDI inflows (% of GDP)	0.4	1.2	1.4	0.5

Source: World Trade Indicators, 2009/10, info.worldbank.org.

Three major problems of the Italian industrial structure are generally put forward to explain the lack of competitiveness and adjustment to globalisation of Italian firms. First, their specialisation in traditional sectors, namely textile and clothing, leather goods production, home goods such as furniture, ceramics, and so on. In these sectors industrial districts have prevailed and have managed to maintain competitive advantages up to the 1990s. Their reliance on informal networks governing the competition and the coordination of small firms has been much discussed in the literature. The increasing competition from emerging countries in these productions have induced Italian districts to move to higher market segments by increasing quality. Many have been able to survive so far but often at the cost of deep restructuring putting the very district form of organisation into question: district firms have been affected by productive internationalisation either by moving some production phases to lower cost countries, some district leaders becoming leaders of a global value chain, or the whole or part of the district has allied with external leaders, thereby becoming part of global value chains. Hence the changing competitive environment is inducing district firms to set up relations external to the districts (see Boschma and Lambooy, 2002, for a review; also

Labory, 2002), whereas in the 1980s the dense local relationships seemed to be sufficient to guarantee the districts' competitiveness.

Most districts have become more hierarchical, some medium district firms consolidating and becoming leader using a smaller network of local firms (Carabelli et al., 2007). Another development less stressed in the literature is the setting up of relations with leaders outside the district, as for instance the leather good districts in Tuscany that have been developing relations and become suppliers of world-wide leading brands such as Dior, Gucci, and so on (Bacci et al., 2010). As shown by Christopherson and Clark (2007), lead firms' use of local outsourcing can imply a tendency for wages to reduce while the demand for skills rises, thereby creating tensions in regional labour markets.

In general, the smallest district firms that used to supply very simple parts or components tend to disappear in these new SME systems, because these simple tasks are outsourced to lower cost countries.

The size of districts has therefore tended to reduce, and locally an increasing need for higher skills has appeared.

Here again there is a role for industrial policy, if the regional authorities are concerned by a balance and hence sustainable development. An increasing dependence on external firms may be a problem in terms of positive freedom, entitlements. Regional authorities may therefore implement policies aimed at consolidating some SME so that they can become leaders of global production systems, in particular (but not only) by ensuring the availability of knowledge and human resources with adequate skills.

This type of industrial policy appears to have been lacking in one of the most famous industrial district, namely the Prato district, as stressed by De Ottati (2007). The Prato industrial districts has been in decline due to the competition from lower cost countries. Some medium firms have consolidated locally, succeeding in competing in higher market segments, but these firms have not been able to maintain many relationships with local suppliers due to their lack of adaptation. "Such an outcome, however, could be avoided through deliberate local governance directed to build, first, a common understanding of the actual challenges and, then, a new vision of local development in

which the challenges transform into opportunities for revitalization” (Dei Ottati, 2007, p. 1831).

Notice that the development road has not been that of using suppliers of Chinese origin which set up in Prato. Chinese firms have indeed created a “parallel district”, focused on lower market segments and with little or no relations with the traditional Prato district.

In the meantime, large firms have tended to reduce their dimension. The Italian productive system has indeed experienced a deep regulatory reform from the 1990s onwards, characterised by a large privatisation programme and the closing of IRI, the Institute for Industrial Reconstruction that was founded by the fascist government in the 1930s and played the role of a holding owning most of the industrial system and which significantly contributed to the catching up and development of the Italian economy (Bianchi, 2002). Regulatory reform was implemented in network industries, such as telecommunications, electricity and gas, within the framework of the European Directives.

This deep transformation has generated a new system characterised by a few large firms, highly restructured and with reduced dimension, often incorporated in large private groups (Telecom in Olivetti, Autostrade in Benetton, Ilva in Riva Acciai). These do not significantly contribute to the country’s R&D, unlike the large Italian firms in the 1950s. Among the first hundred European firms in terms of volume of R&D investment in 2008, only 7 are Italian firms (groups): FIAT (17th), Finmeccanica (18th), Telecom Italia (37th), Unicredit Bank (71st), ENI (gas, 85th) and Intesa San Paolo Bank (100th).² These companies have among the highest R&D growth in the EU in 2008, but they are few (France has 25 firms in the top 100 in terms of R&D investment, Germany, 29 and the UK, 16). In 2008, R&D industrial investment in the EU is essentially realised by France, Germany and the UK, which account together for about 69% of total industrial R&D investment of the top 1000 EU companies and more than half of the companies (581 out of 1000).³

² European scoreboard of corporate R&D investment (IP/09/1716, 16 November 2009).

³ EU Industrial R&D Investment Scoreboard, European Commission, http://iri.jrc.ec.europa.eu/research/scoreboard_2009.htm

The Italian industrial system is therefore in strong need for modernisation at the turn of the new century. The existing network relationships are no longer sufficient, but new relationships based on knowledge have to be created, in order to generate not only incremental innovations but also more radical innovations that could spur the development of new industries. Industrial policy has lacked at national level, although many regions such as ER have made effort at regional level.

Regional industrial development policy in Emilia-Romagna

The Emilia-Romagna (ER) region is an interesting case because this region is to a certain extent a model of application of our sundial. The ER region has been in the past a reference for development based on the consolidation of a civil society: Brusco (1982), Brusco and Sabel (1981), Putnam et al. (1993) have shown how industrial development (especially of SME systems and districts) was also based on social characteristics and values. Today the ER region is becoming an example of industrial development policies aimed at making the region a knowledge-based economy and society, a regional innovation system. Cooke (2001) shows how the region has moved towards a regional innovation system, building networks in a consensual way, although its financial capacity are limited. We show below more recent policy developments in the region.

The Emilia-Romagna region has a high level of development, being one of the leading EU regions in terms of GDP per inhabitants (in PPS). The social cohesion of the region is also relatively high, since the unemployment rate is low and around the natural rate, with a high participation of both women and young people in the labour force.

The industrial system is characterised by the presence of many small firms, but these have a strong tendency to work in coordination. Thus many Italian industrial districts are located in the region (the Central Statistical Office ISTAT counts 13 districts in the region, out of 156 in the whole country). The main industrial sectors, representing about 90% of industrial employment in the region, are mechanical engineering, food processing, construction, housing and fashion. The first sector is also the most intensive in high technology. The main activity within mechanical engineering is that of industrial

processes, which is highly complementary to the other sectors of the regional economy. The region has the highest rate of export per employee in Italy and is among the first fifteen European regions according to the same indicator. The rate of firm creation is the highest among Italian regions (ER Region, 2010).

The innovative performance of the region is good, since R&D spending by firms has more than doubled between 1997 and 2003 and the number of employees in R&D functions increased by 70% in the same period (against a growth of 9% for the whole country). The number of employees in R&D functions and the number of laureates in scientific and technological disciplines is still low however relative to the Union average (ER Region, 2010).

Economic development in ER is not based on maintaining or attempting to desperately maintain old systems such as industrial districts. The ER region has been shown as an example of industrial development based on flexible specialisation within industrial districts in the past (Brusco, 1982; Pyke and Sendenberger, 1992), but the region has also been critical on the potential for such SME systems to remain competitive in the changing environment. Indeed, the regional government authorities had identified the limits of such models already in the 1990s. While the national government was implementing policies specific to industrial districts, providing regions with new competencies in terms of industrial policies for industrial districts (Law 317/1991), the ER region was already stressing that they only represented one type of a diversity of local productive systems which policy should help adapting. The ER region therefore argued in favour of policies aimed at wider types of local production systems and SME systems, which was adopted by the national government in the Bersani law of 1998 (n.114/1998).

In fact, the ER regional government has been able to build consensus and implement industrial policies in partnership with local actors as far as the 1970s. Bellini (1989) characterised the ER region as one in which a strong state co-existed with a strong economy. One instrument of the definition of industrial policy as a long-term vision of industrial development has been the creation of a specific agency, the ERVET (Ente Regionale per la Valorizzazione Economica del Territorio, Regional agency for the

economic valorisation of the territory)), created as a state-owned enterprise in 1973, in order to provide analyses and support to the definition of the regional policies. Industrial associations have been involved in the work of ERVET, especially since 1982, and thanks to this regional agency the ER region has been able to implement SME policy since the 1980s. In the 1980s and 1990s, the main instrument used where the real services to firms, business services aiming at favouring their restructuring (professional training, use of IT, provision of infrastructure, etc.). ERVET provides policy advice, policy assistance and policy support.⁴ After a reform of its statute in 2007 (Law 26/2007) ERVET is still state-owned, its shareholders being primarily the Region, holding 98.64% of its shares, and territorial public entities, holding the remaining 1.36% of shares, but it cannot take shares in other organisations.

ERVET incorporates the ER method and aims in policy-making, defining industrial policy considering the regional territory in all its dimensions (social, economic, environmental, relational, cognitive and institutional) and involving all stakeholders in negotiations. Social policies have indeed been strong in the 1980s (for instance, Law n.27/1989 for the family), aimed at securing home, health and child assistance for families and working mothers, together with education to provide the regional labour market with adequate skills.

Industrial policy in the ER region is therefore characterised essentially by two aspects. First, it is proactive in that the region tries to anticipate change industry is facing and to favour structural adaptation. Second, it is participative, in that policy is defined and implemented through discussion and consensus with all stakeholders, primarily firms, but also with other regional public entities such as towns and provinces.

The policy has been aimed at providing the conditions for business to prosper since the 1980s; increasingly emphasis has been put on innovation and on the need to transform industrial districts into technological districts, meaning the use of new technologies by old districts and the development of new districts in high tech sectors.

One important element of this innovation policy is the creation of ASTER, a consortium composed of the Region, together with regional universities, other research

⁴ <http://www.ervet.it/mission.asp>.

organisations, chambers of commerce and business associations in order to increase innovation and its diffusion in the regional productive system. ASTER has favoured networking among these institutions through various initiatives. It has evolved into the High Tech Network of the region in 2002 (Rete Alta Tecnologia) in order to increase innovation and technological transfer, around different technopoles gathering universities and firms around the main specialisation of the area. The regional innovation policy actions have been focused on research with potential industrial application, involving universities and research centres realising such type of research together with firms. From 2007 these actions have been organised into technological platforms, corresponding to the strongest industries in the region, namely mechanical engineering, agro-food, biomedical, energy and construction. The aim of the high tech network is to strengthen interactions among regional innovative actors and raise the critical mass of research.

In 2000 the region has also implemented an initiative aimed at favouring both the creation of new high tech firms and technological transfer towards existing firms, namely the Spinner project. For the first time in Europe, the global grant of EU structural funds have been used within the framework of European Social Funds to finance this project creating an intermediary organisation, called Spinner, in charge of defining, implementing and managing projects helping (highly-skilled) young laureates or researchers creating new firms or transferring technology to existing firms. Spinner is a consortium comprising as founding partners Aster, Fondazione Alma Mater (an organisation of the University of Bologna aimed at creating links between the university and the society) and Sviluppo Italia, now Invitalia, a national agency promoting investment in Italy. Spinner helps young people in these initiatives by providing financial subsidies, technical assistance and consulting, as well as training.

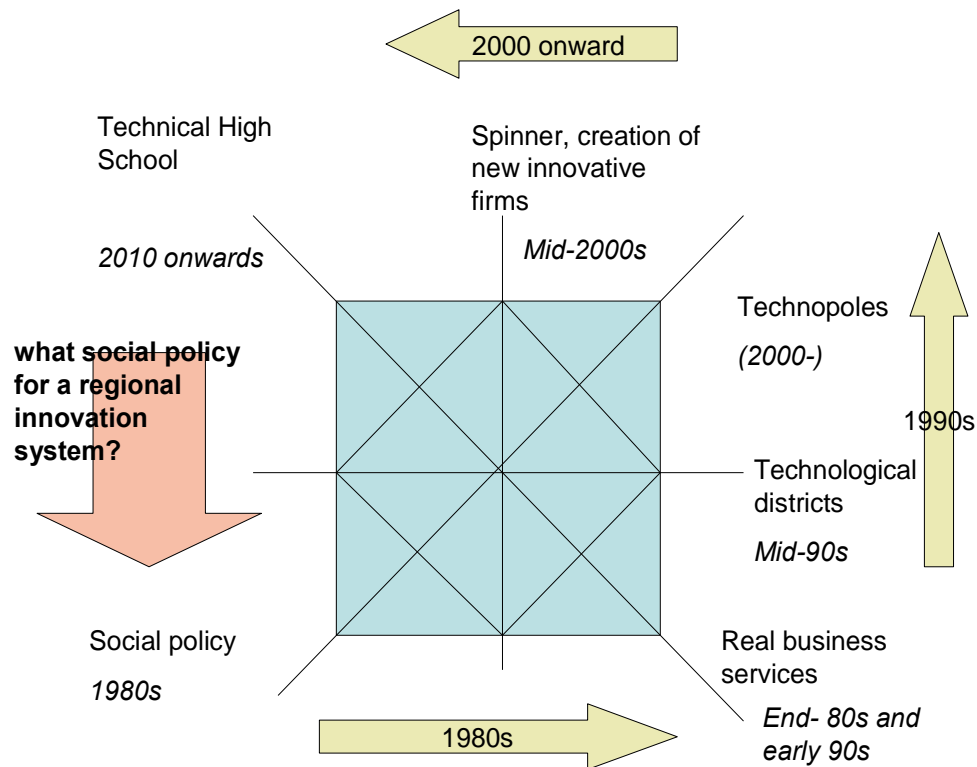
Another phase has been the recent creation of Technical high schools (Istituti tecnici superiori), with the regional regulation of December 2010, GPG/2010/2427. These schools aim at training technicians useful for the firms operating in the region, according to the region's industrial specialisations. Thus a high school in Parma will form technicians with competencies and knowledge useful for the agro-food industry, in

the area where this industry concentrates, while the Reggio Emilia technical high school will focus on competencies useful to the mechanical engineering industry.

In terms of the sundial, the ER industrial policy has evolved through various phases that have shifted the sundial to different areas. The first phase is that of social policies and real business services in the 1980s and the early-90s. In the 1990s, the increasing focus on innovation and upgrading through building technological districts and technopoles imply an upward movement towards the North-Eastern area of the sundial (indicated by the bold arrow). The more recent measures creating Spinner and the technical high schools confirms this move and show an increasing concern towards entitlements in a knowledge-based society. This concern has translated into first, policies for highly-skilled individuals aiming at helping their finding a job in existing firms or creating their own firm; second, policies aimed at lower skills, providing specialised school training workers and technicians. The current question addressed in the ER region is indeed what social policy is most appropriate for a regional innovation system, or more generally in a knowledge-based economy?

Overall, all dimensions have been considered and extended, with focus varying in different phases but allowing a virtuous circle and dynamic development path to be implemented.

Figure 3. Direction of 30 years of regional industrial policy



Industrial development policy implemented in the Emilia-Romagna region in Italy is therefore an example of a holistic and systemic approach. The ER regional policy-makers think in terms of system, mentioning the necessity to build a polycentric regional system of cities or a system of local production systems.⁵

The region has been able to improve both economic growth and social cohesion, pursuing these two objectives simultaneously on the basis of a regional development model that includes the whole territory, through a polycentric web made of (industrial, environmental, cultural and service) specialisations and cooperation between the poles. Of particular importance appears to be the Regional Territorial Strategy of the region (“Piano Territoriale Regionale dell’Emilia-Romagna”) defined in 2010 (ER Region, 2010). This Strategy is interesting not only because it defines objectives and instruments

⁵ www.regione.emilia-romagna.it and FESR (2007).

for the development of the region, but also because it does so in coherence with the other levels of policy implementation, namely the national and European levels. However, there is a lack of strategy at national level, that could provide a complementary effort to regional development (Labory and Prodi, 2010).

5. Conclusions: industrial policy after the crisis

The crisis has made the debate on industrial policy even more important. It has also shown that specific and focused views are useful to resolve particular problems but a vision of the whole in which the particular problem is part is also essential to its resolution. In addition, the crisis has shown that myopic views satisfying short-term interests cannot lead to sustainable economic policies, in the sense of being sustainable not only for the economy itself, but also for the development of its underlying society. Hence we suggest that industrial policy be defined in a holistic approach, that we illustrate using a sundial based on four major pillars, namely entitlements, or the right and capability of individuals to take part in the learning processes underlying development; provisions, namely essentially the tangible and intangible resources necessary for development; innovation, representing the necessary dynamic character of any action supporting development, adjusting and sustaining learning processes determining development paths; and territory, because the learning processes sustaining development are embedded in specific territories. Whatever the territory under consideration, policy action must be coherent at all levels, be it regional, national or supranational (this dimension is important in the Union).

Given competitive challenges, policy-making has to identify possible trajectories of development and gear policy instruments to the favoured trajectory. For this purpose, it is essential to start from production organisation and its underlying social characteristics. Industrial development is extremely complex, much more now than at the time of the large, vertically integrated firm and the concentration of whole sectors in specific regions. Regions must now simultaneously show excellence in specific tasks and be able to create relations with the rest of the world.

The ER case shows that a long-term vision of industrial development can be effectively defined and implemented if this is done in a process involving local stakeholders and ensuring consensus. The region has been able to successfully establish a regional system of innovation (as defined and surveyed by Doloreux and Parto, 2005), in the sense of a regional network of public and private institutions supporting the creation and/or adoption, the development, improvement and diffusion of new technologies in the productive system, making it perhaps a true regional innovation policy space (Uyarra and Flanagan, 2010).

As shown in the paper, the industrial development path favoured by the ER industrial policy is sustainable from a social point of view. This may be the main reason for its success (as shown by the main economic indicators of the region relative to the rest of the country and to the EU as a whole).

The ER industrial policy thus illustrates a way to overcome the Italian model of industrial development based on industrial districts. Industrial districts are specific forms of productive organisation that have shown to be efficient and effective in the past, but are experiencing many challenges nowadays as a result of the unfolding of the globalisation process. The ER region had in the past and still has industrial districts among its local production systems, but the regional policy is not aimed at their desperate maintenance. Instead, the ER region has identified challenges faced by industrial districts and on this basis has designed a policy aimed at favouring the structural adaptation of districts, their upgrading by using new technology. Meanwhile, the emergence of new industry has been promoted by raising the innovation potential in the region, as well as technology transfer by creating dense networking between research organisations and regional industry, and training human capital to provide new industry with adequate labour force, and raise their capability to create relations with the rest of the world.

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