

WINIR Inaugural Conference
Old Royal Naval College, Greenwich, London, UK
11-14 september 2014

Industrial Economics and Policy : Recent History and Theoretical Foundations

Arena Richard (Nice-Sophia Antipolis University, GREDEG-CNRS)

Véronique Dutraive (Lumière-Lyon 2 University, TRIANGLE-CNRS)

The purpose of this contribution is to understand better the nature of the evolution of the notion of industrial policy since the 1980s. Our point of view is twofold. We will investigate which is the origin of what was called industrial policy by policy-makers and economists in the 1980s and how the term evolved from the 1980s to nowadays. We will also take into account the main existing theories which tried to explain this real evolution and to understand its conceptual meaning.

Three periods will be made distinct from this perspective. The first corresponds to a period in which industrial policy as such tended to be discarded and replaced by competition policy. The second is associated to the emergence and rise of knowledge-based economies and of the importance of innovation; it changed both the real contents of industrial policy and the analytical reflection devoted to it. The last period is characterized by a profound revival and a substantial change of the contents of industrial policy related to the impact of economic structural change. This temporal distinction does not correspond however to three entirely different periods including for each of it a specific and original approach. For instance, the difference or even the opposition between industrial and competition policy will be one of the common threads of our contribution. The idea that industrial policy can be reduced to competition policy or is mainly based on it is present in each of these periods even if it is more and more debated. The empirical contents of the notion of industrial policy was indeed carefully analysed by various theoretical approaches of industrial economics and policy. This variety implies two consequences. First, there is no one-to-one correspondence between the periods considered and specific approaches. Most of the time, different analytical interpretations of industrial policy tried to understand the same period referring to distinct visions of the economy. Second, some concepts, debates or analytical developments are present during the three periods considered. For instance, the discussion about the respective merits of markets and state intervention was always present and divergent views on industrial policy co-exist defending opposed approaches. These remarks point out that industrial policy is a complex reality and a polysemous concept which this text will try to clarify.

1. « The best industrial policy is no industrial policy »: liberal and neo liberal industrial policy

« The best industrial policy is no industrial policy » (Aiginger, 2007: 297-323): this is the main idea which prevailed during the period of the 1980s when economic public intervention was discredited and industrial policy was substituted to competition policy. In this context characterized by firms confronted to a substantial rise of new competitors, subsidies devoted to support traditional « declining » industries were first considered to be unhelpful to the necessary structural adjustments required by the transformations of the global world economy. Second, industrial policies supporting “national champions” with sector-based subsidies were clearly criticized. Quite the reverse, the main idea was to try to reduce public spending in three ways: the reduction of subsidies; the privatization of public firms out of core state activities and the encouragement of competition at both the national and international levels. The term “industrial policy” was less and less used by policy-makers and was often interpreted as a typical example of an inefficient form of state intervention. This discredit of industrial policy had two characteristics. It is first the consequence of a liberal conception of the working of a market economy which tried to convince economic agents of the benefits of the perfect markets and of the harmful effects of the welfare state. It is also related to a neo-liberal conception which also introduces a different point of view since it accepts the legitimacy of a form of state intervention associated to the substitution of competition to industrial policy. The period of the 1980s is highly representative of the liberal conception. At the beginning of this decade, Margaret Thatcher and Ronald Reagan were elected and favoured liberal policies while in its end ex-communist countries began to replace planning by markets. Moreover, the substitution of industrial to competition policies also became a general tendency related to globalization. Thus, for instance, assistance to development coming from the World Bank or the International Monetary Found became conditioned by liberalization in many emerging countries according to what was called the ”Washington Consensus” (privatization of public firms, policy of opening markets...). But it is certainly in the European Union under construction that this principle was applied the most strongly. As Elie Cohen noted, since the introduction of the Rome Treaty, « competition policies have a quasi-constitutional status. The Commission defends the interests of the consumer while adapting the global movements towards economic liberalization to the community space» (E. Cohen, 2007: 221). Mario Monti also stressed the fact that the EU is the only economic zone which provides such a form of control of state subsidies (Monti, 2009: 237). From an institutional perspective, (the so-called « economic rules of the game »), the predominance of competition on industrial policy is also convergent with the principles and rules of the World Organization Trade concerning trade policies, public subsidies to exports and anti-dumping

legislation.

Is a liberal industrial policy conceivable?

In many respects, there is no real liberal policy. Most of the time, the liberal approach to industrial policy only consists in a criticism and the reaction of liberal economists to the industrial policies of the 1970s provides a good instance of this attitude. The origin of this reaction derives from the idea that in a market economy there is no efficient form of economic regulation apart from market allocation. The theoretical origins of this form of economic liberalism are various. One of them is the Austrian economic tradition of the spontaneous order which argues that the firm seen as a form of organization, the state or any other type of economic institution are unable to equal market as regards their performances in the allocation of scarce resources. Another one is the Walraso-Paretian tradition which relates market and social optimum. The existence of a market General Economic Equilibrium is indeed considered as the necessary condition of the realization of social welfare. The analytical foundation of this conclusion is related to the conception of economic activity developed by the Lausanne School. For this school of economic thought, production is indeed nothing more than an extended form of exchange. Therefore, it is entirely dominated by a pure market-oriented economic logic and we can now understand why according to the Lausanne School, the notion of market competition is the core of industrial activity and sums up how this activity is usually working. From this point of view, it therefore becomes easy to understand why for the Lausanne School liberal followers of the 1980s, the only possible attitude as regards industrial policy is to fight against state intervention which was emblematic during the golden age years and their predominance of the Welfare State.

The only conceivable form of liberal industrial policy can then be defined and implemented: it is necessary to restore as much as possible an exclusive form of pure market regulation thanks to a systematic policy of privatization and of reduction of public subsidies to industry. The most frequent argument mentioned is the search of the best efficiency and performances of the market supply. The main idea put forward is that market failures implied by imperfections of competition are often overestimated and that, far from correcting them, most of the time, the state contributes to amplify them. Thus, what is argued is that, thanks to the informational advantages state-regulated firms have compared to those of their market competitors and to the possibilities of collusion they have access to, rents emerge, distort competitive mechanisms and contribute therefore to perpetuate industrial policies interpreted as an expression of a logic of public choice and of competitive distortion.

For the same reasons, even the very notion of competition policy is often contested. This policy is

supposed to give a too large room to the state since it permits it to control demand for instance through measures of quality control of products or of distortion of the information destined to consumers or suppliers, especially through anti-trust policy. According to this view, it is better to let to market private institutions the task of market control since they are more efficient than public institutions. This task can be given to self-organized professions the purpose of which is to make markets more transparent, more efficient and more consistent with free competition mechanisms. These professions include accountants, firm consultants, fiscal consultants, firm auditors, financial analysts, counselors-at-law ...

Therefore, competition policy itself seems useless for the partisans of this first type of approach. It assumes that market economies are essentially regulated by free market and free competition principles. Any type of institutional or control intervention which does not respect these principles can only be analysed as a perturbation of the logic of exchange and therefore as a violation of some form of natural order.

The neo-liberal conception of industrial policy: the primacy of competition policy.¹

Contrary to the precedent approach, another conception stresses the importance of competition policy. The general point of view defended by this neo-liberal conception consists of considering competition policy as the core of industrial policy and to draw attention on the danger of building and implementing a pure policy supporting “national champions”. Competition policy is no longer considered to be useless by neo-liberal economists as it was the case for their liberal colleagues. The reason of this difference is rooted in the Walraso-Paretian tradition; for neo-liberal economists, the sole purpose is the “maximization of consumer welfare” (OECD, 2009: 11). The main arguments used partially overlap the liberal criticism: the state is not able to obtain the adequate informations to choose which industry or sector to support (because of the imperfection of centralised information or of market failures for instance); rents generated by the public support provoke activities of capture and corruption (electoral and political motivations replacing search for economic efficiency); elections and public support to national champions favour distortions related to the size of firms which generate allocative inefficiencies. However, the neo-liberal conclusion differs from the liberal one: industrial policy must be limited to competition policy since the latter is considered to be much more efficient than the former to fight against excessive prices while being clearly less expensive². Neo-classical arguments consist in showing that competition policy (market

¹ This part draws heavily on an OECD report entitled « Competition policy, Industrial Policy and National champions » and especially on the analytic note written by David Spector which does not concern directly the period we consider here but perfectly uses and expresses the economic arguments developed by the « neo-liberal » approach (OECD, 2009).

² In a more recent context and concerning industrial policies developed by emergent countries, the following

regulation and control of mergers) can in fact help to realize the objectives of industrial policy: rationalizing production; fighting against “excessive prices”; developing new sectors, new firms, new goods produced by incoming firms, productive and allocative efficiency related to rivalry on contestable markets, etc... (Spector 2009:41). When competition policy is compared to a policy of promotion of national champions as regards economic performances, three types of positive externalities usually emerge: “the realization of economies to scale” which essentially results from the pressure of market mechanisms and from the concentration and the rationalization it generates (*op cit.*:41) ; « the limitation or excessive prices by foreign monopolists » thanks to the creation of positive transnational externalities (*op. cit.*:42-43) and “measures facilitating entry in new sectors and firm efficiency» (*op.cit.*:43-45). However, in practice, laws on competition regulate competition policy and if theoretical debates in economics have made more complex the very definition of competition and sometimes influenced the legislator, what finally remains is that «maximizing *consumer welfare* is the only economically legitimate goal of antitrust policy» (Brock, Obbst, 2009: 67). Therefore according to the advocates of competition policy, the interest of the national economy is identical to the interest of consumers, namely their welfare understood in a self centered self-interest perspective as the global utility they draw from material consumer goods.

The neo-liberal conception of industrial policy: universality and context-independence.

If industrial policy includes other measures than those of competition policy, it must however be compatible with this latter. If this condition is satisfied, it can also consist of specific purposes such as the improvement of the competitiveness of national industry, the increase of knowledge related to it and the intensification of innovation but these purposes cannot lead to an industrial policy which would help “national champions”. From this viewpoint, it is possible to conclude that industrial policy *as such* must necessarily be compatible with competition policy and « respectful of sound competition principles » (OECD, 2009: 12).

Whichever is the macroeconomic context which prevails and the sector considered, the central role attributed to competition policy must always be maintained. As the following quotation confirms it:

« The importance both of the free market and of the protective role of the competition authorities as regards the free market should prevail, even in times of severe economic crisis. In

quotation of the OECD secretary report perfectly characterizes this conception: « In any case, empirical evidence shows that, in a globalised world, emerging firms grow better by first competing at home without state support, and thus prepare themselves better to compete on international markets. Indeed, intense rivalry between firms and the permanent threat to incumbents posed by innovative entrants are a far better engine of growth than industrial policies run by bureaucrats who are not subject to market discipline, but are capable of being captured by vested interests. There is also ample evidence of the failure of many national champions, which can often be ascribed to a lack of accountability, and to economically irrational decisions resulting from politicised governance » (OECD, 2009:16).

fact, in turbulent times, competition itself can play a considerable role in helping to steady economic nerves; competition law and policy, as instruments that protect competition, are therefore of significant value. It is axiomatic that political concerns are capable of influencing proposed solutions to a given economic crisis. Consequently, such solutions may be formulated in a manner that does not respect the pro-competitive principles of the free market. At all times though, policy makers should recognise the fact that robust competition policy is essential in order to prevent long-run harm to the global economy in the period following the stabilisation of economic conditions. In dealing with the current crisis one must ensure that competition law and policy continue to apply to, and to be respected in, all sectors of the economy, including the financial sector. » (OECD, 2009: 12)

This quotation is especially significant. It points out the central importance and permanence of the principles which support competition policy within the neo-liberal approach.

On one side, the purpose of extending competition is perfectly independent of the macroeconomic context in which the national or the global economy is developing. Obviously, this point of view can only be conceived if one assumes that the microeconomic working of market economies is not influenced at all by its macroeconomic context. It therefore implies that the macroeconomic state of the economy is only the aggregate result of micro-decisions and that it only depends on these decisions. Some form of logical consistency is thus respected even if the price to pay is high: the only relation between the micro- and the macro-economic levels is aggregation ; therefore, the macro-decisions of the state or of international institutions or organizations cannot influence the microeconomic working of national and global economies, except as a form of distortion or imperfection as regards social welfare. In this context, competition precisely appears to be a positive means to avoid this form of distortion or imperfection.

On the other side, it is assumed that competition policy must be applied in the same way to all the economic sectors. An exception is not conceivable. This point of view excludes any form of sectoral specificity and has to suppose that the institutional (type of market auction, form of organization of buyers and sellers, nature of intermediaries between supply and demand, degree of price flexibility, role of social norms on the market ...) and productive (type of product, materiality of product, form of trading, form of returns, prevailing techniques, ...) characteristics of the market are not influenced by competition policy since its effects are assumed to be uniform in all the markets of the economy. From this perspective, the very notion of “industry” or of “sector” loses any meaning and it becomes impossible to conceive a sectoral or a macroeconomic dynamics where economic structural change is possible. This neo-liberal approach implies therefore a vision of industrial dynamics heavily rooted in a dynamic conception of the economy based on steady states and economic disequilibria seen as linear and provisional perturbations. The notions of vertical integrated sectors, production chains or networks are also difficult to be defined and used in this context which underestimates interdependence effects at the national or the global level. Specific,

sectoral or industrial market failures are also excluded and therefore the possibility of sectoral state subsidies is rejected, even if these subsidies are limited and transitional.

Solutions provided by competition policy are therefore universal, namely, independent from time and geography. They pave the only possible way to follow. In this context, the meaning of references to globalization always refers to the context of a competition policy which tends to be more and more defined in the world economy and to become therefore a competitiveness policy. The originality of the neo-liberal approach compared to the liberal one consists in the defence of competition policy or of an industrial policy compatible with competition policy. Therefore, neo-liberal approaches are not purely critical as liberal are, as regards the notion of industrial policy. They also tend however to underestimate the historical, the institutional as well as the geographical contexts. But we will see that the growing space attributed in the end of the 1980s and the 1990s to technological change and to the decrease of the importance attributed to the national context will oblige the neo-liberal approach to change and shift to new concepts and views. This does not mean yet that it ceased to exert an essential intellectual influence until now.

2. The New « Holy Grail » of the Industrial Policy in the 1990's and the beginning of 2000's: Innovation, Clusters, and Competitiveness.

The purpose of the second part of this paper is to provide an analytical interpretation of the changes which affected the contents of the North American and the European industrial policies during the 1990s and the beginning of 2000's. During this period, industrial policy indeed remained a term associated to state intervention, sectoral policy and national champions which a majority of policy-makers and economists preferred not to make use of. For them, competition policy remained the major reference when the field of industrial activity was invoked in order to characterize or to contribute to an agenda for economic policy related to it. Various objectives were considered to build this agenda. One of the major specificities of the period – reflected in Europe by the Lisbon Agenda for instance – consisted in promoting the necessity of building a new “knowledge-based economy” rather than a “manufacturing renaissance”.

The global economic context of the period may be summarized by the insightful following figures. The weight of the American gross domestic product (GDP) in percentage of the world GDP passed from 38 % in 1960 to 24,6 % in 1980 and to 30,8 % in 2000. Meanwhile, the part of European Union (at 15) increased from 22,4% in 1960 to 31% in 1980 and then declined until 25 % in 2000 while the part of Japan increased from 3,3% in 1960 to 14% in 1980 and 14,6% in 2000. The American percentage in world exports in manufactured goods passed from 15% in 1967 to 9% in

1987 to back up to 12% in 1990s. While Japan's part of world exports in manufactured goods which was of 5% in 1967 reached more than 10% in the middle of the 1985's (CEPII, 2012). To sum up, from the 1960s to the end of the 1980s, the American economy was confronted to a phase of decline and catching up by European economies. During the same period, some East-Asiatic and Latin-American countries knew a period of substantial growth. However, during the 1990s, the decline of the North-American economy stopped and United States returned on the center economic stage.

Far from leaving the market to *Laissez Faire*, the American public authorities reacted vigorously to the decline of their economy and the state actively contributed to the promotion of the so called « new industrial revolution » mainly based on the development and various uses of the NTIC and biotech sectors. The American strategy then became a model for the high-income countries and the link between knowledge-oriented activities and economic growth became a predominant and recurrent theme. This is why it can be said that in this period, « industrial policy is merging more and more with innovation policy » (Soete, 2007:273). The rationale of these new « industrial » policies is clearly different from the one which was prevailing in the 1960's: policies became « horizontal » and ceased to remain « sectoral »; they did not try to foster great national incumbents leaders – the national champions- but rather to help small and medium-sized innovative enterprises; the sphere of public intervention ceased to be the nation - characterized as a set of forward and backward linkages between manufacturing sectors and industries. The regional and the international levels were more and more considered as the new frame for economic activity. Finally, « the role of the state [was] mostly confined to being the facilitator, not the driver of the process » (Dobrinski, 2009:292).

In connection with this new context, three key words might be used which sum up the foundations used to analyse, interpret and justify the industrial policies of this second period: Innovation, Cluster and Competitiveness.

Innovation policy: nature of interventions and theoretical justifications

The 1990's have been the decade of major technical and technological changes which exerted crucial repercussions on the world economic structure. USA and Japan both illustrate an effective policy of support for the high technology industries. The United States massively financed the R&D of companies thanks to various agencies, sometimes related to the military sector, and which civil impact is substantial. The Japanese government decided to attribute very important grants to the university research and to finance very little the R&D expenses of companies. It played however an essential role of coordinator and prospector, especially through its focus on the innovative activities of the companies.

The public support to innovation therefore became the new credo of economic policy. In this context, the new spirit of public intervention is to avoid the fallacies of « sectoral and vertical industrial policies » and first promote « horizontal » policies, namely to act on the microeconomic and legal environment of companies in order to reinforce its compatibility with competition policy. The idea is to help to build a new « knowledge-based economy » and to organize public action around three main domains: education, upstream and downstream factors of innovation - the financial conditions of research and the intellectual property rights laws - and high-technology sectors. In the first of these domains, the objective was to improve labor productivity, adaptability and mobility of workforce in order to fit with the new economic context of international competition. Thus world indicators devoted to the comparison of national educative systems (Program for International Student Assessment - PISA, Academic Ranking of World Universities – Shanghai ranking) were introduced to favour the normalization and geographic mobility of labour force. Concerning the second domain, various political tools were mobilized to sustain R&D by direct subsidies, stimulative fiscal policy and financial market regulation on the one hand, and by a development of the sphere of intellectual property rights (to boost the possibility of appropriation of research results) and reforms in public research systems (to move it closer to the market by patenting and public-private cooperation) on the other hand. The idea was to allocate public funds to small and medium rather than to large firms « reflecting the view that industrial policy should rather focus on the development of small innovative companies. This view can be traced back to Schumpeter's idea that growth is a process of creative destruction in which new firms displace older incumbents, so that a sound industrial policy should foster the development of small, innovative firms rather than help incumbents.» (OECD, 2009:32). The stress put on the third domain is more paradoxical because in spite of the criticisms of the sectoral orientation of industrial policies, a major attention was paid to the high-technologies and specially to ICTs and biotechnologies because of their supposed structural effects on the economy taken as a whole (especially on new sectors, new products and markets but also on the productivity in all other economic sectors).

Two major analytical foundations were used to explain the introduction of this new type of industrial policy, even if they were not necessarily compatible from a theoretical point of view: *market failures and welfare economics literature* on the one side and *evolutionary economics* on the other one. The market failures and welfare economics literature provided some arguments for public intervention in order to foster innovation (Dobrinski, 2009:284). According to this literature, private companies cannot indeed appropriate some of their expected returns. Industrial activity is associated to externalities generated by high initial costs and sunk costs which make risky at least in the short term activities implemented by private companies and indirectly financed by private equity and

financial markets. Externalities are not intrinsically related to activities based on R&D and knowledge. However, these activities are among those which tend to increase the most the level of risk since they permanently generate externalities which are especially uneasy to avoid. Legal means as patents or licenses provide in this context a means to get these externalities; moreover, competition including these means allows a form of externalities distribution among firms through imperfect competition mechanisms which can be retraced through standard as well as dynamic game theory. Sometimes, if some forms of knowledge generate too large increasing returns or externalities in spite of legal devices, the state must intervene as it is the case for instance in the field of fundamental research. Finally, these reflections were also extended to economic geography (CAE, 2006). Therefore, the literature on market failures and welfare economics contributed to question competition policies in showing that new technologies and especially ICTs create externalities which increase the variety of market failures and of the cases in which social welfare is not reached. It therefore paved the way to a new industrial policy attributing a larger role to legal means of reducing externalities and to state intervention when markets become inefficient, in connection with what was observed in the real economic world of the 1990s.

Evolutionary economics also provided a set of tools which could help to take seriously into account the role of innovation and knowledge as factors of growth in a dynamic perspective. The initial purpose of evolutionary economics was to offer an alternative theory of the firm and of competition by overcoming difficulties associated to « substantive » rationality, production functions and traditional microeconomics. This approach focused on the notion of selection in competitive processes, introducing variety, adaptation, and learning behavior in a dynamic economic framework. Within this framework, economic growth is conceptualized as a co evolution process of social and technological technologies. In Neo-Schumpeterian's models « the traditional view of linear innovation models (from research to technology to commercial product) has given way to the now dominating view that innovation results from simultaneous interactions of many agents interconnected in a complex system » (Dobrinski, 2009: 281). Because the economic mechanisms and dynamics bound to these factors are complex and multiple (see for instance Saviotti, 1995 part II) and consequently imperfectly manageable, the lessons for a public industrial policy are not so easy to be drawn. However, a strong message of evolutionary models is the conclusion that market processes are not always efficient, as the defenders of competition policy tend to argue. Moreover, the notion of *national system of innovation* was defined and introduced by evolutionary economists and contributed to a renewed reflection concerning industrial policies and economic growth. This notion permitted to express the efforts made by several predominant economies in the construction of a new « knowledge-based economy » and in the organization of public action around the domains of education, innovation and high-tech activity. It also allowed a better understanding of

the substitution of industrial policies taking into account the new economic tendencies towards globalized competitiveness to industrial policies mainly based on competition policy objectives in a national context. Thus, comparative studies concerning national systems of innovation permitted to take into account the weight of globalization as well as the importance of the development of local clusters or geographical areas (see below). These studies led to assess if national systems of innovation rather favour *variety* or *convergence* of national competition or, better, industrial policies taking more and more into account both tendencies to globalization and to clusterization.

Even if market failure and welfare economics literature as well as evolutionary economics tried to provide new tools to understand the industrial policies of the 1990s and the beginning of the 2000s, it is obvious that these two approaches strongly differ from an analytical point of view. This remark shows that far from inspiring industrial policy, economic theories rather provide tools which can be used by policy-makers to justify or explain their own conceptions. This is why policy-makers do not exclude to make use of different approaches, even if they are based on distinct analytical foundations as it is the case with both approaches we referred to in the present section.

The new form of organization of economic activities: regional cluster agglomerations

As the preceding section stressed, innovation-based activities are too much complex to be only and always managed by market processes and some new institutional and organizational forms therefore emerged which are connected to the localization of activities. The nation or the country is no more considered indeed as the scope of the geographical organization of activities. Delimited territories or areas became more and more the targets of new policies.

The success of the Silicon Valley, which is the industrial pole for high-technology industry, specialized in electronic equipment and in production of software, have inspired most of the « cluster » policies like for instance the « pôles de compétitivité » in France.

« Clusters are geographic concentrations of interconnected companies and institutions in a particular field. Cluster encompasses an array of linked industries and other entities important to competition. They include, for example, suppliers of specialized inputs such as components, machinery, and services and providers of specialized infrastructures. Cluster often extend downstream to channels and consumers and literally to manufacturers of complementary products and companies in industries related by skills, technologies or common inputs. Finally, many clusters include governmental institutions – such as universities, standard-setting agencies, think tanks, vocational training providers, and trade associations – that provide specialized training, education, information, research, and technical support» (Porter, 1998:78). The economic arguments used to support a decentralized approach of industrial policy centered on "clusters" can be found in *Evolutionary economics* as well as in *New geographical economics*. These two approaches share the idea that prices dynamics is not only affected by variable costs, as

in the traditional microeconomic reasoning, but by fixed costs of varied nature, which entail Marshallian's increasing returns. The proximity and the geographical agglomeration favor territorial external economies of scale – based on the sharing of inputs and the constitution of labor pools - compatible with a combination of competition and of inter-firm cooperation at different stages of the process. The proximity also favors learning and spillover effects bound with industrial and market linkages which are the intangible assets of innovation. This new form of inter-firm relations especially appears with the rise of dynamic games which include different behaviour and activities at the various stages of a game which reflect a combination of various objectives in time. All the economic properties updated in these models have in common to emphasize « dynamic market failures » (increasing returns, locking effects and polarization phenomena) by opposition to « static market failures » (size of the market, monopoly) like in the previous models of competition policy. They establish the new forms of public intervention: these have to be horizontal, decentralized, upstream to the market. And it implies that they have to favor the positive dynamic effects. « Industrial policy then not only internalizes externalities, but also produces externalities » (Aiginer, 2007: 314). On the other hand, the models also tend to show that the "success" is unpredictable, based on finally unpredictable and unverifiable micro-phenomena (sometimes explained by historical events). These difficulties generated some debates concerning the capacity to influence economic agglomeration. For example the Silicon Valley agglomeration is considered by some as a spontaneous phenomenon and by others as strongly influenced by state policies and specific institutions (property rights legislation, financial markets).

Competitiveness and globalization of productive processes

At the same time as this trend towards regional agglomeration an opposite trend of production fragmentation could also be observed in the 1990's. The globalization of the productive process by transnational companies rose in parallel with the rise of the share of exports in the World GNP. In other words, the tendencies towards supranational and regional level of activities overlapped. The rise of globalization of production and offshoring was clearly the outcome of a combination of political factors, which widened the opportunities for FDIs (fall of the Berlin's Wall, China's opening), of technological factors (information reduction, fragmentation of the value chains) and of specific economic factors (WTO's rules, financial market deregulation policies). The new meaning of *competition* more and more became *competitiveness*. The term « has become the holy grail of industrial policy » (Bailey-Driffield, 2007: 193). Popularized in political sphere by Porter, the concept of competitiveness stems from the analysis of firm business and management to that of the regions and countries and transposed explicitly the assessment of countries performances from a

macroeconomic to a microeconomic framework (Aiginger, 2006: 63). Increasing market shares in world exports by reducing costs, increasing productivity and fostering innovation became the major objective of economic policies. On the other hand, it also consisted in attracting FDIs by fiscal or other means.

Another novelty may be stressed: territories, national economic regulation and institutions were put in competition. This is why globalization is also a force of homogenization for policies. As the World Bank's « Doing Business Ranking » created since 2002 explicitly express: « By gathering and analyzing comprehensive quantitative data to compare business regulation environments across economies and over time, Doing Business encourages countries to compete towards more efficient regulation; offers measurable benchmarks for reform; and serves as a resource for academics, journalists, private sector researchers and others interested in the business climate of each country » (World Bank Doing Business, 2014).

Evolutionary economics and *New geographical economics*, the conceptions of which can be extended to and used in the field of international economics, *New institutional economics* and *New international economics* foundations caught also the attention of policy-makers. Evolutionary economics can help to explain phenomena such as the polarization of FDIs in R&D, the success or failure of some offshoring experiments taking into account the importance of tacit knowledge (by opposition to information) and the proximity of economic activities. New economic geography can encompass integration and dispersion effects of economic activity at the world level. New institutional economics try to explain alternative forms of organization of firm activities from an international perspective: exports/imports (market process of buying or selling), franchise or joint venture or FDI (integration) in connection with prevailing transaction costs or contractual conditions. In this context, national economic environment and culture (institutions, policies) matter to understand firm choices or strategies as regards localization of activities.

But some debates took place concerning these forms of economic dynamics. On the one hand, some stress was put on firm motivations and on the fact that their choices were based on cost-benefit calculus. From this perspective, the definition of new competition policies became less and less oriented by consumer welfare and more and more by business interest: there is only one optimal environment for business, market and competition, and the reduction of obstacles to business³ and to international trade and investment became the only admissible policies. On the other hand, firms are also forming strategies. They follow their competitors or react to their behaviours, and the state is clearly a player of the game. Therefore, more and more economists, consider that there is a room for public intervention through the definition of a « strategic commercial policy » (a renewal of the

³Like the list provided by WB « doing business » criteria : reduce time to start a business, time to deal with construction permits, time to get electricity, time to register a property, time to export, time to enforce contracts, time to hire and fire an employee, and time to resolve insolvency.

infant industry arguments) or active industrial policy, which implies that there is no « one best way » but some space for a range of diversity among institutional designs according to the various national histories and trajectories (see for instance Krugman and Obstfeld, 2009, Rodrick, 2007 or Amable, 2005).

The assessment of the horizontal policies of support of innovation and R&D is balanced. Working on the business environment turns out to be insufficient to allow all participants to support international competition and to proceed to the structural transformations in a growing background context of energy and environmental crisis. By still emphasizing competition through the notion of competitiveness, desindustrialization and the development of the financialization of the big firms industrial strategies (waves of mergers - acquisitions) on an international scale is favoured. The specialization in research, services and finance appears to be unfit for establishing a balance in the world exchanges (Prodi, 2010, Artus and Virard, 2011, E. Cohen, 2009: 237-250). The competitiveness policies also affected public finance. In E.U.(27), the average of taxes on corporate income passed from 30 % in 2000 to less than 22 % in 2012 (Barba Navarreti & Venable, 2013: 11). « One is that of jurisdictions competing against each other and generating a prisoners dilemma; investment is diverted from other locations, but little new investment may be created. If all countries use policy there may be little net effect on outcomes but considerable transfer of resources to firms » (Barba Navarreti & Venable, 2013: 8).

The economic effects of the subprime mortgage and current economic crisis put at the center the stage of the "proactive", sectoral industrial policies (EC 2012: 8) and drew an avenue to renew the economic conceptualization of industrial policies.

3. New trends in industrial policy: structural and institutional change and economic analysis

The economic and financial crisis which took place at the end of the 2000s and still exerts its effects to-day drastically influenced the world economy and especially the economies of the European Union. In Europe, the decrease of the level of production was about 10% and 3 millions of jobs have been destroyed since 2008 (EC, 2012: 3). This crisis renewed the interest devoted to industry since, as Aiginger noted, industry was and is both characterized by « a statistical decline and [its] maintained importance » (Aiginger, 2007: 302). In the main developed countries, the part of the industrial jobs and of the industrial added value in the GDP clearly declined but the importance of industry in the exports was maintained since the 1980s (63% of the global international trade in 2010) and 85% of the R&D investments are still implemented in the industrial sector. Moreover, the effects of industry on firm services and the number of indirect jobs related to them grew and the importance of hybridation of industry and services (as regards products as well as productive

organization) increased drastically. This is why, according to a report of the European Commission, “to a large extent industry can help the EU economy to recue from the crisis” (EC, 2012:32), the new objective being to re-industrialize the European economy with the ambition to reach 20% of the part of industry in the European GDP about 2020 (from 16 % in the average to-day) (ibid.).

Economic structural change in the 2000s

These numbers show that economic structural change is today the main issue of industrial policy and was already it in the early 2000s before the crisis especially with the emergence and the development of new technologies. The predominant global point of view however changed substantially. Before the crisis, a large part of economists and policy-makers believed that the output of the sector of ICTs was the driving force of growth while to-day there is a increasing consensus on the idea that the main issue is the adoption of ICTs by *all* the economic sectors and therefore their overall diffusion. In fact, between 2000 and 2004, the American growth was weaker in the ICTs sectors than in the other ones (Kohler, 2006: 102). The ‘innovative sector’ corresponded to 0,4% of the US added value and the sector of semi-conductors represented about 0,5% of employment in developed countries (McKinsey Global Institute, 2010).

The investigation of the relation between the economic and the financial crisis also contributed to understand better the importance and meaning of economic structural change. The financial crisis revealed the danger of a global economic strategy of specialization mainly based on the development of finance, R&D and services. This type of specialization weakened economies and made them sensible to external shocks. For instance, in contrast with UK and France, some economies as Germany and Japan were able to preserve intermediary manufacturing activities which permitted them to participate to the new international division of productive processes in a more advantageous way. We could also refer to Greece and Spain which were much more affected by the “sovereign debt crisis”: their growth was essentially based on domestic services, construction industry and real estate and their energy and manufacturing goods imports could not be compensated by tradable services surplus (Artus and Virard, 2011).

In other terms, external constraints are back and imply the return of the imperative of re-industrialization » (CAE, 2011: 46). It is easy to understand that the norms of debt reduction do not allow the equilibration of the current account balance of desindustrialized economies. Moreover, innovation is not sustainable without a strong industrial production support since we know to-day that both activities are always strongly connected.

The preceding remarks are sufficient to show how much the notion of economic structural change played and is still playing an essential role in the debates related to industrial economics and policy.

Economists as different as Fontagné, Mohen, Wolff (2014), Naudé (2010a and b) and Rodrik (2008) recently resituated the notion of structural change in an historical perspective. For these authors, it is clear that economic growth also implies in the long run a “fundamental process of structural transformation” (Naudé, 2010a: 1). This process concerns the sectoral evolution of technology, consumption and income as the theorists of structural economic change (Baumol, Chenery, Syrquin, Pasinetti ...) showed it a long time ago in the 1960s and still stress nowadays⁴. It naturally generates debates “on the sources of total factor productivity (TFP) growth, the extent and determinants of convergence in per capita incomes, the nature of technological progress and innovation, the role of manufacturing in growth and development, the rise of the service sector in value added, of agglomeration, clustering and urbanization, and other issues” (Naudé, 2010a: 2). From this perspective, the novelty of contemporary structural change is first related to the relation between industry and services. During the Golden Age decades, we all know that the part of agriculture decreased in the GDP of developed countries, first in favour of industry and then more and more in favour of the sector of services. However, in the last two decades, the border between services and industry has become less and less distinct. First, new technologies as ICTs reinforced substantially the importance of the intermediary sector of industrial services which contributed to confuse the border. Second, as Fontagné (Fontagné, Mohen, Wolff, 2014: 1) noted, an increasing part of industrial firms are classified within the service sector but their activity in this sector is generated by the subdivision of their industrial value chain at the international value and the evolution of the notion of intellectual property. This redefinition of the border between industry and services has important effects on the relation between firms, services and industry, creating new activities in which some firms or parts of firms tend to specialize in output production which are not material but contribute to industry, as Factoryless Goods Producers (FGPs) (see again Fontagné, Mohen, Wolff, 2014:2). This new type of economic structural change also appears at the ‘local’ level with the emergence and the evolution of clusters and therefore of inter-firm relations favoured by new forms of state intervention and of industrial financing (especially through new types of public subsidies and of venture capital): the borders between firms are here transformed, pointing out another crucial aspect of economic structural change.

All these transformations obviously imply a new industrial policy. Here, the novelty is not only related to the fact that the old opposition between horizontal and vertical policies is less and less meaningful but can also be found in the increasing difficulty in this context to reduce industrial policy to competition policy: this latter type of policy is indeed inadequate to bring answers to the challenge implied by a new form of structural change. Moreover, it is necessary to correct what appear to be *ex post* misleading strategies in the domain of industrial policy. The excessive decline

⁴ For an appraisal of the analytical contributions of the theories of economic structural change, see Arena and Porta, eds., 2012)

of some industrial sectors in some developed countries has led to a loss of knowledge and capabilities which will not be restored easily. Industrial policy will therefore be useful to a re-orientation of structural change in order to strengthen specific knowledge-intensive sectors, areas of economic activities, regions, clusters, technologies and even industrial services, especially in new types of economic activity.

Finance and globalization in the 2000s

The contents of the financial crisis reinforces this conclusion. It is first more and more clear that finance activities do not provide an efficient issue for a type of structural change replacing industry and especially the new combination of industry and services by finance activities in developed countries; quite the contrary, industrial policy must favour a rebalancing of finance activities in favour of this new combination. Second, the financial market crisis, the difficulties met by banks and the emerging economic recession led many banks to reduce their lending to firms in order to repair their impaired balance sheets. The main consequence is that debt financing has become more expensive and difficult to obtain, so has financing through capital markets. Risk capital financing was also reduced substantially. The effects of the financial crisis on financing still remain significant in many developed countries since the industrial sectors which are strongly impacted are precisely those in which knowledge-based and high-technology investments are important and costly. Industrial policy answers to this problem are possible and related to the role of state in financing mechanisms: it is necessary to stop a mechanism in which innovative firms cannot invest what will be necessary to promote economic growth.

The process of economic globalization also participated to the emergence of a new form of international structural change. First, as noted by Naudé (2010b), developing countries can be classified in two categories: those which adopted the most “heterodox” industrial policies as China, India, Viet-Nam and many Asiatic countries and obtained the best performances; and the “good pupils” as some African countries which followed the “orthodox” lessons of the IMF and the WB. Now, the economic development and rise of the first of these countries substantially contrasted with the decline of some developed countries implying a real structural change of the world economy. Second, this international structural change was associated to a differentiation of industrial policies related to the structural situation of the various countries (generated by the state of national industries, sectors and types of market). For instance, even before the crisis outbreak, in a report dated 2005, the European Union defended a specific “matrix approach” combining horizontal policies (generic and independent from market specificities; contributing to the elimination of

market failures; favouring endogenous growth ...) and sectoral policies (see Aiginger, 2007); this matrix gave a significant illustration of the evolution of the variety of forms of industrial policy. Mac Kinsey reports (2010, 2012) also considered that public policies could not provide identical solutions for the whole variety of sectors and argued that they had to be made distinct, “tradable” sectors corresponding to globalized oligopolistic markets and “non tradable” ones being related to domestic ones: the basic idea is that it is difficult for public authorities to control tradable sectors while it is easier to control the latter. Moreover, Kinsey defined industry in an extensive way (including trade and services) and considered that employments are created in majority in domestic and local services rather than in high technological sectors. Obviously the contents of industrial policies must take these distinctions into account and therefore face a differentiated international structural change.

New analytical developments on industrial policy in the 2000s

In order to better understand the nature of the economic structural changes which are impacting economies at local, national and international levels, economic theories had to adapt and provide new developments.

Thus, the literature on market failures and welfare economics tried to renew its contents and message taking in to account new phenomena related to economic structural change.

First it combined microeconomic analysis and more macroeconomic tools related to the theories of endogenous growth. An interesting example of this analytical tendency is given by the contribution of Elie Cohen to the Round-Table of the OECD we already referred to (Cohen E., 2009). E. Cohen notes that three fundamental and widespread assumptions can be debatable. The first – typically liberal or neo-liberal – assumption tells that the state is not able to assess efficiently performances of various firms and sectors and therefore that industrial policy can only generate extremely costfull mistakes (Cohen E., 2009: 226). The second assumes that there is a systematic bias in the state policy which leads it to support systematically national champions which contradicts the objective of economic welfare based on the optimal allocation of resources. The third pretends that the state is constantly submitted to lobbies which prevent it to be an independent and non biased assessor of industrial policies. Now for E. Cohen as for new industrial microeconomics, the state and the markets can both fail to find an efficient allocation as the financial crisis and financial market failures showed it. Finally, E. Cohen contested the idea of the universal superiority of competition, “some forms of competition implying a negative impact on innovation” (ibid). Aghion and his co-authors (Aghion, Dewatripont, Du, Harrison, Legros, 2012 ; Aghion, Boulanger, Cohen, 2011) also

combined micro and macroeconomic tools to show that it was to-day useless to have “existential” debates on the contents of industrial policy. Their point of view was that the combination of these tools could allow to point out which were the sectors where competition and innovation were crucial and to define therefore an industrial policy which favoured welfare, avoided market failures but also contributed to global endogenous growth.

Second, the literature on market failures and economic welfare also focused on the problems related to new markets the creation of which was not spontaneous but submitted to the regulation of (national, international or local) public authorities as it is the case for instance in the “green” economy with the markets of licenses to pollute or carbon taxes; these markets are not only governed by the objectives of self-interest but also by the purpose of public interest and the conciliation of these objectives requires in its turn the use of the theory of market failures as well as of public economics to cope with the essential presence of substantial externalities. The literature on market failures and economic welfare was also used to cope with R&D and knowledge based activities; here again, externalities are at the center of knowledge markets; the first are monetary externalities related to the increase of quasi-rents or of the amount of sales in a sector generated by the R&D expenses in another sector (see the mechanisms of inter-sectoral diffusion of new technologies); the second are knowledge externalities generated by knowledge itself characterized as a social good (see how for instance the bio-technological paradigm replaced the chemical paradigm in the pharmaceutical industry).

Third, coordination failures provided a further analytical field to explain some aspects of economic structural change. Thus, for instance, the notion of cluster provides a good example of these possible failures which industrial policy can help to avoid. In this context, the analytical task of the literature on market failures and economic welfare is to look for a characterization of the best possible coordination of firms and economic activities in a given geographical space (Fontagné, Mohen, Wolff, 2014: 8). In the same perspective, the knowledge externalities mentioned above cannot be coped with through market mechanisms. These mechanisms have to be completed through state intervention: innovation subsidies, incentives to create technological areas or public purchase contracts provide tools to complete possible failures which cannot be avoided in a pure market economy (ibid.). Finally, public authorities can play an essential role when mergers and acquisitions are realized at the international level; firms are not able to assess what national welfare is and the state can again give its help to contribute to evaluate and then contribute to favour this welfare (ibid.). Finally, this assessment of welfare by the state is also useful to try to ensure international competitiveness since this notion does not only concern firm but nations (Pelkman, 2002, Aiginger, 2006: 122 for a definition of the notions of “wide industrial policy” and “outcome competitiveness”).

In spite of these advances, substantial limits however remain when one looks for the foundations of a new industrial policy using the literature on market failures and economic welfare. This literature has the merit of replacing the opposition between perfect and imperfect competition by a continuum of possible forms of economic coordination including various types of imperfect competition but also inter-firm coordination schemes and differentiated state interventions. This continuum allows to define industrial policy in relation with all the possible specific cases. This point of view may appear to conciliate analytical rigour and realism. However, as Gabszewicz et Thisse (1999) already noted a long time ago it generates this continuum provides a patchy set of models the global consistency of which is far to be obvious and which is neither robust nor generalizable. Finally, economic structural change is not analysed as such in this literature but only through its effects on economic coordination; therefore this literature is not convincing when the main issue to consider is structural change.

In comparison, evolutionary economics is better equipped to study the specificities of economic structural change. Several examples of this type of contribution can be considered. Thus, Davies, Rondi and Sembenelli (2001) proposed a matrix of the market shares of the main European industrial firms which specifies two criteria: the industries to which they belong and their national origins. Thanks to this matrix, it is possible to follow the evolution of the degree of diversification, of the geographical area and the level of firm multinationalization in European industry and therefore to understand some aspects of European structural change and elaborate the foundations of an industrial policy which is entirely different from a competition policy. Another example is provided by Malerba (2007) in which in a “history-friendly” framework, economic dynamics is related to the diverse industries. We can also refer to a paper of Castellaci (2005) which relates technological regimes and sectoral differences of productivity. These differences depend on different conditions of technological appropriability, different levels of technological opportunities, various levels of education and capabilities, degrees of openness to international competition and firm sizes. In a close analytical framework, Cantwell and Iammarino (2001) show how, in an economy submitted to a quick process of globalization and economic integration (as in Europe), regions create geographical connections with other territories either in the same country or in another European country utilizing multinational firms efforts of technological change. Here again, national countries and the European Commission are necessarily interested in the formation of clusters and networks and can act on productive organization to reinforce emerging connections with the help of adequate industrial policies. Finally, Malerba, Nelson, Orsenigo and Winter (2001) focused on the specific case of increasing returns industries as, for example, those which are impacted by numerical technologies. In this context, competition is obviously analysed through the

definition of anti-trust policies but also the definition of a program of subsidies allowing the development of new forms of technological organization.

All these examples are centered on different aspects of economic structural change as such. In this context, industrial policies cease to be first competition policies and can contribute to the re-orientation of technological change and of its forms

Beyond “new industrial microeconomics” and evolutionary economics, the changes of economic analysis of industrial policies did not only concern theorists of economic structural change but also economists preoccupied by the relation between it and institutional change. Economic structural change indeed necessarily implies this latter type of change. The revival of institutionalist economics provided an important source of inspiration to characterize new industrial policies, not only for economists but also to experts belonging to international organizations. The period of the first “Washington Consensus” characterized by “shock therapies” as lifting of price controls, privatization of activities, promotion of stabilization macroeconomic policies, international markets openness is now definitively closed. Economists are to-day more and more convinced that institutions provide foundations to efficient market economies (Roland and al, 2008) and some of them even argued that “institutions fundamentalism” had replaced “market fundamentalism” (Rodrik, 2006). This is why in their preoccupation of diffusing norms and rules of efficient governance, international organisations tend to-day to classify countries according to the “quality” of their institutions, as laws on contracts or property rights. Beyond this tendency, to a large extent, this revival of institutionalism is favoured by the interest dedicated to economic structural change. Structural change indeed naturally implies that there is not one single way but a diversity of ways towards growth and development (Amable, 2005). Now, if we take institutions seriously into account, this conclusion is reinforced. As noted by Rodrik (Rodrik, 2004), different *institutional functions* (securization of transactions, incentives, coordination ...) may be implemented by different *institutional forms*. The consequences can be described easily. Industrial policy cannot be defined simply as it was the case for competition policy. Competition policy was independent from institutions and assumed the existence of a real benchmarking around the notions of pure competition and economic welfare. By contrast, industrial policy has to be accomodated with structural and institutional change and therefore is context-dependent and variable. In an evolutionary perspective, this institutional diversity has also to take time into account. For instance, informal institutions, namely behavioral rules are not easy to change while formal institutions can change more quickly; therefore, according to the rhythm of transformation of the economy, industrial policy can favour one of these two types of institutions.

Beyond evolutionary and “new microeconomic” theorists, institutionalist economists therefore also

contributed to the understanding of industrial policies. We could also add contributors belonging to the tradition of the theories of economic structural change as Andreoni (Andreoni and alii, 2014). This pluralism in analytical contributions shows how much structural change is now playing an essential role in the definition of new industrial policies.

Two major conclusions can be drawn from our contribution.

First, it is clear that industrial policy is a complex reality which expresses economic observations, political considerations and analytical interpretations. It is not surprising therefore that various points of view are defended to understand it, that they do not coincide and form a matter of debate. These points of view also evolved with time but often persisted and overlapped. It is not therefore easy to untangle the strings of arguments and discussions in the matter of industrial economics and policy to-day.

Second, our contribution showed a surprising evolution in time of the notion of industrial policy. The starting-point of this evolution was the beginning of the 1980s when most of economists and policy-makers tended to discard industrial policy and to insist on competition policy. The present situation shows that the stake of industrial policy became to-day the understanding of how public authorities can help our economies to favour a form of economic structural change which can help the world economy, the various countries and smaller and local areas to generate growth, innovation and employment. The evolution we tried to point out is striking because it gives the impression that reality obliged economists to adapt their analytical contributions, whichever these were *a priori*. In matter of economic policy, contributors are thus condemned to understand *ex post* instead of explaining and foreseeing *ex ante*. The examples of the concepts of pure competition and economic structural change are significant from this point of view. The developments devoted to both of them show that the progressive explanatory weakening of the former and the sudden rise of the latter were mainly the result of economic change in the real world rather than the conclusion of analytical debates between different streams of thought.

Aghion P., Boulanger J., Cohen E. (2011), «Rethinking Industrial Policy», *Bruegel policy brief*, Issue 2011/04, june, 8p.

Aghion P., Dewatripont M., Du L., Harrison A., Legros P. (2012), « Industrial policy and competition », *NBER Working Paper* No. 18048, Issued in May 2012, 23 p.

- Aiginger K. (2006), «Revisiting an Evasive Concept: Introduction to the Special Issue on competitiveness», *Journal of Industry, Competition and Trade*, Volume 6, Issue 2 : 161-177.
- Aiginger K. (2007) «Industrial Policy: A Dying Breed or A Re-emerging Phoenix», Special Issue on The Future of Industrial Policy, *Journal of Industry, Competition and Trade*, Volume 7, Issue 3-4: 297-323.
- Amable B. (2005), *Les cinq capitalismes – Diversité des systèmes économiques et sociaux dans la mondialisation*, Seuil, Paris.
- Arena R., Porta P. L., (2012), *Structural Change and Economic Growth*, Cambridge University Press, 308 p.
- Artus P., Virard M-P. (2011), *La France et ses usines*, Fayard.
- Bailey D., Driffield N. (2007), «Industrial Policy, FDI and Employment: Still ‘Missing a Strategy’», Special Issue on The Future of Industrial Policy, *Journal of Industry, Competition and Trade*, Volume 7, Issue 3-4 :189-211.
- Barba Navaretti G., Venables A.J. (2013), «Multinationals and industrial policy», *Centro Studi Luca D'Agliano*, Development Studies Working Papers, n°350, April.
- C.A.E. (2005), *Pour une nouvelle politique industrielle*, Rapport coordonné par J.L. Beffa, La Documentation Française, 2005, 71p.
- C.A.E. (2006), *Politiques de la concurrence*, Rapport coordonné par D. Encaoua et R. Gesnerie, n° 60, La Documentation Française, Paris, 2006, 303 p.
- Cantwell J., Iammarino S. (2001), «EU Regions and Multinational Corporations: Change, Stability and Strengthening of Technological Comparative Advantages», *Industrial and Corporate Change*, n°10 (4).
- Castellacci F. (2007), «Technological regimes and sectoral differences in productivity growth», *Industrial and Corporate Change*, 16 (6): 1105-1145
- Cecchetti S. Kharroubi (2012), « Reassessing the impact of Finance on Growth », *Bank For International Settlements*, Working Paper n°381.
- CEPII (2012), *Panorama de l'Economie mondiale* (Fouquin M., Guimbard H., Herzog C., Ünal D.), http://www.cepii.fr/PDF_PUB/pano/monde.pdf.
- Cohen E. (2007), «Industrial Policies in France: The Old and the New», Special Issue on The Future of Industrial Policy, *Journal of Industry, Competition and Trade*, Volume 7, Issue 3-4, :213-227.
- Cohen E. (2009), «Compte rendu de la discussion», in OCDE *Policy Roundtable: Competition policy, industrial Policy and national Champions*, DAF/COMP/GF (2009) 9, : 237-250.
- Commission Européenne (2012), «Une industrie européenne plus forte au service de la croissance et de la relance économique», *Communication de la commission au parlement européen, au conseil, au comité économique et social européen et au comité des régions*, COM (2012) 582 final, 38 p.
- Davies S., Rondi L., Sembenelli A., (2001), «European Integration and the Changing Structure of EU Manufacturing, 1987–1993», *Industrial and Corporate Change*, n° 10 (1): 37-75
- Dobrinsky R. (2009), «The Paradigm of Knowledge-Oriented Industrial Policy», *Journal of Industry, Competition and Trade*, Volume 9, Issue 4: 273-305.
- Dore R. (2008), «Financialization of the global economy», *Industrial and Corporate Change* 17 (6): 1097-1112.
- Fontagné L., Mohen P., Wolff G., (2014), «Pas d'industrie, pas d'avenir ?», *Notes du CAE*, n°13, Juin, 12 p.

- Gabszewicz J., Thisse J.F. (1999), *Microeconomic Theories of Imperfect Competition – Old problems and New Perspectives*, Edward Elgar. Cheltenham.
- Kohler W. (2006), «The “Lisbon Goal” of the EU: Rhetoric or Substance?», *Journal of Industry, Competition and Trade*, Volume 6, Issue 2, : 85-113
- Krugman P. Obstfeld M. (2009), *International Economics – Theory and Policy*, 8th Edition, Person International Edition, 706p.
- Malerba F. (2007), «Innovation and the dynamics and evolution of industries: Progress and challenges», *International Journal of Industrial Organization*, 25.
- Malerba F., Nelson R., Orsenigo L., Winter S. (2001), «Competition and industrial policies in a ‘history friendly’ model of the evolution of the computer industry», *International Journal of Industrial Organization*, n° 19.
- McKinsey France (2012), «Industrie 2.0 – 5 pistes pour permettre aux industries française de tirer parti de la mondialisation»
- McKinsey Global Institute (2010), «How to compete and grow: a sector guide to policy», 53 p, www.mckinsey.com/mgi
- Monti M. (2009), «Compte rendu de la discussion», in OCDE *Policy Roundtable : Competition policy, industrial Policy and national Champions*, DAF/COMP/GF (2009) 9, : 237-250.
- Naudé W. (2010a), «Industrial Policy», *Working Paper n°2010/106*, United Nations University.
- Naudé W. (2010b), «New Challenges for Industrial Policy», *Working Paper n°2010/107*, United Nations University.
- O’Sullivan E., Andreoni A., López-Gómez C., Gregory M., (2013), « What is new in the new industrial policy? A manufacturing systems perspective », *Oxford Review of Economic Policy*, 29 (2): 432-462
- OCDE (2009) *Policy Roundtable : Competition policy, industrial Policy and national Champions*, DAF/COMP/GF (2009) 9, 250 p.
- Pelkman, J. (2006) « European industrial Policy », in Bianchi P. & Labory S. (eds), *International Handbook of Industrial Policy*. Edward Elgar. Cheltenham.
- Porter M.E. (1998), «Clusters and the new economic of competition», *Harvard Business Review*, reprint Number 98609.
- Prodi R. (2010), «For a New Industrial Policy», ERIEP, n°1, mis en ligne le 22 juillet 2010, URL: <http://revel.unice.fr/eriep/index.html?id=3094>
- Rodrik D. (2004), «Getting Institutions Right», <http://ksghome.harvard.edu/~drodrik/papers.html>
- Rodrik D. (2006), «Goodbye Washington Consensus, Hello Washington Confusion?», <http://ksghome.harvard.edu/~drodrik/papers.htm>
- Rodrik D. (2009), *One Economics Many Recipes – Globalization, Institutions, and Economic Growth* - chapter 4 : «Industrial Policy for the Twenty First Century», Princeton University Press, United Kindom, 263 p.
- Rodrik D. (2007), *One Economics Many recipes –Globalization, Institutions and Economic Growth*, Princeton University Press, 263p.
- Rodrik D. (2008), « Industrial Policy, don’t ask Why, ask How », *Middle East Development Journal*, Demo Issue (2008) 1–29.
- Roland G., Kornai J., Mátyàs L. (2008), «Introduction», *Institutional Change and Economic Behavior*, n°144, IEA Conférence, Palgrave, MacMillan.
- Saviotti P. P., (1995), «Renouveau des politiques industrielles: le point de vue des théories évolutionnistes», *Revue d'Economie Industrielle*, vol. 71(1), :199-212.

Soete L. (2007), «From industrial to innovation policy», Special Issue on The Future of Industrial Policy, *Journal of Industry, Competition and Trade*, Volume 7, Issue 3-4, :273-284.

Spector D. (2009) «Background note» in OCDE *Policy Roundtable : Competition policy, industrial Policy and national Champions*», *DAF/COMP/GF (2009) 9*, :25-47.

World Bank Doing Business (2014), <http://www.doingbusiness.org/rankings>