

**INDUSTRIAL POLICY IN THE EU:
A GUIDE TO AN ELUSIVE CONCEPT**

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**INDUSTRIAL POLICY IN THE EU:
A GUIDE TO AN ELUSIVE CONCEPT**

Xavier VANDEN BOSCH



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ABSTRACT

Despite renewed interest in an EU industrial policy, the concept remains particularly elusive because it has no universal definition. This paper relies on a broad and inclusive definition of industrial policy proposed by Warwick (in an OECD working paper) to provide a clearer picture of what the concept encompasses when applied to the EU. It therefore includes an original visual taxonomy of the EU policies that constitute industrial policy. It can serve as a guiding framework for reflecting on industrial policy in the EU.

The proposed framework holds a key lesson: coherence of action across different policy fields and across different levels of governance is essential at EU, national and regional levels. The framework provided in this paper constitutes a high-level reminder of the range of policies and associated instruments that should ideally be streamlined throughout the EU for maximum impact when any industrial sector, technology or task is promoted by the EU.

INTRODUCTION

EU industrial policy seems to be back in fashion. Various strategic documents produced by the European Commission in recent years have reflected a renewed interest in active industrial policy. As part of the EU 2020 strategy, the Commission presented a flagship initiative on industrial policy – *An Integrated Industrial Policy for the Globalisation Era* – in October 2010. Two years later, in October 2012, the Commission released an update entitled *A Stronger European Industry for Growth and Economic Recovery*. In the latter, the Commission set a key objective: to restore industry's share of GDP to 20% by 2020. In January 2014, the Commission released yet another communication, entitled *For a European Industrial Renaissance*, as a contribution to the European Council debate on industrial policy which would take place on March 20-21, 2014.

This renewed interest in industrial policy cannot be unrelated to the quest for growth and jobs in a period of crisis. Yet, prominent as it is, the concept of industrial policy remains ambiguous. What is the scope of industrial policy? What are its objectives? Which instruments can be used and at what level of governance? The main objective of this paper is to clarify the concept and to broach the basic tenants of industrial policy in the EU. It will allow the reader to have a more concrete picture of the means associated with industrial policy, and hence better apprehend what otherwise tend to be very abstract discussions.

This paper will first discuss the concept of 'industrial policy' and underline the elusiveness surrounding the term (Part I). In Part II, we will attempt to remove some of the confusion by presenting a definition of industrial policy, taking into account the remarks made in Part I. The relevant policies and instruments of industrial policy used at EU, national and regional level will be exposed schematically in Part III. The purpose will be to frame the 'big picture' of industrial policy as it is pursued in the EU. Finally, reflecting on these findings, we will discuss some key challenges for industrial policy in the EU (Part IV).

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I. THE ELUSIVENESS OF INDUSTRIAL POLICY

In this first part, we will first discuss the word ‘industry’ (a) before turning to the word ‘policy’ (b). This introductory exploration of the words composing ‘industrial policy’ will help to anchor its elusiveness: different conceptions exist not only regarding the scope of ‘industry’, but also regarding the meaning ‘policy’ when applied to industry. The discussion will in turn help the reader to grasp the choices that will be made when we choose a single definition of industrial policy for the purpose of the paper (in Part II).

a. What “industry”?

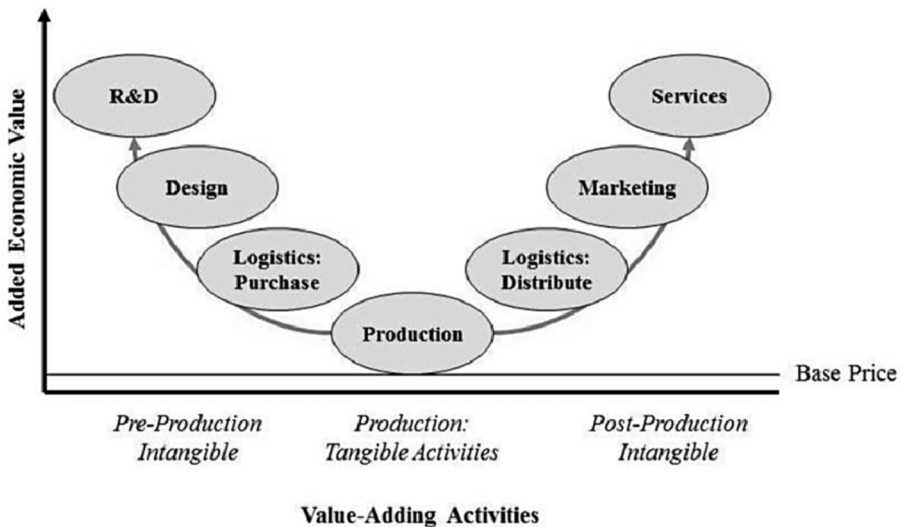
The difficulty surrounding the concept of ‘industrial policy’ first emanates from the ambiguity of the term ‘industry’. In popular parlance, ‘industry’ tends to mean ‘manufacturing industry’, and at times – even more narrowly – ‘production’. The manufacturing industry is in this sense classically associated with the secondary sector, as opposed to the primary (agriculture, forestry, fisheries, and extractive industries) or tertiary (services) sectors.

But industry can also be understood in a much broader sense as encompassing all activities that allow the transformation of research results into new products and services. This broader definition can be traced back to the etymology of the word ‘industry’. The English term comes from the French ‘industrie’ or Latin ‘industria’, and originally meant ‘hard work’ (*Oxford English Dictionary*). As Cohen (2000) points out, the term appeared in the fifteenth century and then evolved with time. The article on ‘industry’ by François Quesnay in the *Encyclopaedia, or a Systematic Dictionary of the Sciences, Arts, and Crafts* (1751-72), mentions that the word means ‘either simple handmade work, or the inventions of useful machines, relative to arts and professions ... the industry embraces everything, vivifies everything and animates everything in nature.’ Later, Jean-Baptiste Say would give a new definition of industry in his *Traité d’Economie Politique* (1803): ‘human activity deployed in order to produce useful merchandises’ – so it seemed appropriate to him to call all sectors of activities ‘industries’. He then distinguishes between the agricultural industry (or, more simply, agriculture), the manufacturing industry and commercial industry (commerce).

Beyond this brief exploration of the origin of the term, it is also useful to reflect on the classical association of industry with the secondary sector and on its distinction from services. The classical breakdown of economic activities into three sectors was notably popularized by the work of Simon Kuznets on national accounts. But this traditional breakdown should be questioned. It is out-dated to consider manufac-

turing and services as completely and fundamentally different sectors. One gets a clearer picture of the limits of this segmentation when considering the value-adding activities performed in the manufacturing sector. As shown in Figure 1, additional activities in pre- and post-production phase generally create more value than production itself. In some manufacturing firms, more than half of employees are employed in these other, service-like activities. Many other manufacturing enterprises have outsourced part of their value chain, splitting it internationally, and focusing instead on their competitive advantages. One famous example is the American firm Apple, which concentrates on high value-added research and design (R&D), design and marketing, and outsources lower value-added production and assembly activities to Asia (Kraemer, Linden & Dedrick, 2011). In other words, if we equate industry purely with the production of goods, we miss the fundamental point that ‘some manufacturing enterprises also produce services, others mainly produce services, and others no longer produce anything but services’ (Fontagné & al., 2014).

Figure 1: Location of value added in the value chain. Source: Warwick (2013)



The use that EU institutions, and in particular the Commission, make of the term ‘industry’ remains ambiguous. In general, the Commission evokes industry in the narrow sense of the traditional statistical category of the ‘manufacturing industry’. This is what the Commission meant when it used its 2012 Communication to propose boosting the declining role of industry in Europe from its current level of around 16% of GDP to as much as 20% by 2020.

However, the Commission at least implicitly recognizes a broader definition of industry. In its recent communications on industrial policy, the Commission evokes

technologies, economic activities and tasks that are not strictly associated with the manufacturing sector. For example, the completion of the Single Market deals extensively with the services market and digital economy. The ‘third industrial revolution’ evoked by the Commission implies massive use of information technologies, hence many activities in the service sector. The Commission also mentions bio-fuels, whose development is closely linked with primary sector activities, as well as energy and extractive industries, which provide the input for manufacturing industries. And more generally, the Commission recognizes and stresses that ‘the whole value-chain must be considered; from access to energy and raw materials to after-sale services and the recycling of materials’ in the EU approach to industrial policy (Commission, 2010).

In sum, when the Commission evokes EU industrial policy, it sets the manufacturing industry at centre stage, but does not ignore the extensive ramifications across the entire economy, and thus it implicitly embraces a broad definition of industry. As for the 20% target, it remains a relatively poor operational target that is likely to be missed.

b. What “policy”?

So what does ‘policy’ mean when applied to the word ‘industry’? To say that industrial policy is simply a policy area that deals with industry obviously does not help us grasp what it encompasses. Unlike monetary policy, competition policy or trade policy, ‘industrial policy lacks a clearly identifiable set of goals, policy instruments and institutions, such as a legislative framework to delineate the scope for industrial policy or designated agencies to execute it. In other words, while denoted a “policy”, industrial policy lacks most defining features thereof’ (Riess and Väilä, 2006). Objectives can range from innovation support to outright support to declining sectors, and they may vary over time and place. The toolkit of instruments used is also difficult to identify, in contrast with other economic policy fields.

Riess and Väilä (2006) also stress that because of this lack of identification, industrial policy has never developed into a distinct area of economic analysis. There are no ‘industrial policy economists’ but instead a disparate group focusing on different fields. According to these authors, the first group of economists can typically be labelled ‘mainstream’ economists. They are trade economists, competition specialists and scholars of the microstructure of markets. They largely classify their work by including it in the neo-classical, industrial organization literature. Their analyses justify state intervention only in so far as they address a failure of markets to allocate resources optimally, and when the economic benefit of the intervention exceeds its cost.

Another group of ‘non-mainstream’ economists lumps together a wide variety of approaches. They range from the more pragmatic approaches of neo-classical theories (like new growth theories, new trade theories) to systems-of-innovation approaches, which focus on the institutional environment for innovation. The former still operate in the mainstream optimizing framework, while the latter reject the notion of optimality, emphasizing instead the role of the public sector in determining the economy’s development path.

This dichotomy between mainstream and non-mainstream economists only hints at the variety of economic thought on industrial policy. It is in practice impossible and pointless to try to summarize how non-mainstream economists’ approaches differ from or are similar to the neo-classical approach. However, all schools of thought have a common starting point: there is a role for the public sector to play in determining the production structure in the economy. The debate then revolves around the question of what the public sector should do, under what circumstances and with what objective. Obviously, this kind of exploration of the role of the state in the economy is framed by much ideology and rhetoric. This leads some to think the resulting heated debates are fruitless (Ha-Joon Chang, 2006).

As a consequence of this variety of thoughts regarding the scope and impact of industrial policy (or the role of the public sector in the economy), there is no universally accepted definition of industrial policy. Table 1 gives an overview of the vast scope of definitions found in the economic literature. Definitions vary for the term ‘industry’ and in the scope and objectives of ‘industrial policy’. In Part II we will discuss a broad definition that will be used for the remainder of this paper.

Table 1: A range of possible definition of “industrial policy” found in the literature

“Industrial policies are concerned with promoting industrial growth and efficiency.” (OECD, 1975)

“Industrial policy may be generally defined as any government measure, or set of measures, to promote or prevent structural change.” (Curzon-Price, 1981)

“...the term industrial policy indicates the relationship between business and government on a microeconomic level...” (Wachter and Wachter, 1981)

“...everything which is useful to improve growth and competitive performance.” (Adams and Klein, 1983)

“Industrial policy... means government policy aimed at or motivated by problems within specific sectors.” (Tyson and Zysman, 1983)

“Industrial policy means the initiation and co-ordination of governmental initiatives to leverage upward the productivity and competitiveness of the whole economy and of particular industries in it.” (Johnson, 1984)

**Table 1: A range of possible definition of “industrial policy”
found in the literature (*Continued*)**

“Industrial policies refer to those policies intended to affect in some ways manufacturing or service industries.” (Graham, 1986)

“...a wide-ranging, ill-assorted collection of micro-based supply initiatives which are designed to improve market performance in a variety of occasionally mutually inconsistent ways.” (Geroski, 1989)

“Industrial policy is an attempt by a government to encourage resources to move into particular sectors that the government views as important to future economic growth.” (Krugman and Obstfeld, 1991)

Industrial policy is one “aimed at particular industries (and firms as their components) to achieve the outcomes that are perceived by the state to be efficient for the economy as a whole.” (Chang, 1994)

Industrial policy “can be defined as any policy affecting the allocation of resources to industry and in this sense embraces both macroeconomic policy ... as well as the more traditional areas of microeconomic policy.” (Sharp, 1998)

Industrial policy is “every form of state intervention that affects industry as a distinct part of the economy.” (Foreman-Peck and Frederico, 1999)

Narrow view: “Restrict attention to policies that target particular firms and industrial sectors.”

Broad view: “any policy that shapes or influences the competitiveness of a country’s firms and industries.” (Beath, 2002)

“...restructuring policies in favour of more dynamic activities generally, regardless of whether those are located within industry or manufacturing per se.” (Rodrik, 2004)

Industrial policy is “the activity which creates a favourable environment for European business in general, the manufacturing sector and its industries in specific.” (Aiginger and Sieber, 2005)

“Industrial policy refers to a set of measures taken by a government and aiming at influencing a country’s performance towards a desired objective.” (Pitelis, 2006)

Source: Warwick (2013) based on Aiginger (2007) and White (2008).References can be consulted in Warwick (2013).

II. OPTING FOR A DEFINITION OF INDUSTRIAL POLICY

Although there is no universally accepted definition of industrial policy, we need one for the purpose of this paper – and to clarify the concept. We will voluntarily opt for a definition that is sufficiently broad. This allows us to encompass the different possible theoretical conceptions of industrial policy and also to be relevant to the practice observed in numerous countries or regions throughout the world. The definition can thus be used in reference to industrial policy practices of EU Member States but also of developing countries or of fast-emerging countries like China.

The recent definition by Warwick (2013) from the OECD satisfies these criteria:

Industrial Policy is any type of intervention or government policy that attempts to improve the business environment or to alter the structure of economic activity toward sectors, technologies or tasks that are expected to offer better prospects for economic growth or societal welfare than would occur in the absence of such intervention.

This definition addresses several fundamental questions: *what* industrial policy is, *how* it operates, its *target* and its ultimate *objectives*.

First, industrial policy is **‘any type of intervention or government policy.’** Industrial policy is thus employed as a catch-all term for many different public policies. It thereby considers not only horizontal or framework policies but also more sectorial/vertical measures. This is further underlined by the fact that industrial policy attempts to **‘improve the business environment or alter the structure of economic activity.’** The first part encompasses a market-based approach introduced by neo-classical economists who generally reduce industrial policy to mostly ‘horizontal’ policies aiming at improving the framework conditions (business environment). The latter part encompasses a more interventionist approach where the stated objective is altering the structure of economic activity during the process. The term ‘economic activity’ is chosen by Warwick (2013) because it is ‘a much broader term than “production”, which might be construed as relating only to the production industries (typically manufacturing, construction, primary production and water and sewage) or the manufacturing sector alone or, even more narrowly, the fabrication stage of the manufacturing value chain.’ In other words, the definition implies that ‘industry’ should be understood in its broad, original sense, of ‘economic activities’.

The definition also recognizes that industrial policy typically targets **sectors, technologies or tasks**. This first means that some ‘verticality’ or sectorial approach may characterize industrial policy. Moreover, industrial policy may aim to favour technologies

like, for example, biotech, ICT or clean-tech, which may typically be relevant across sectors (across different 'industries'). And finally, industrial policy may target specific tasks (shorthand for both tasks and bundles of tasks or activities that make up stages in the value chain), like design or logistics. This also recognizes that parts of the value chain that may be classified as services are actually part of 'industry'.

Finally, the ultimate objectives pursued by industrial policy are not limited to economic growth. Other societal objectives may be pursued by industrial policy. These include addressing global warming and ensuring economic cohesion. Thus industrial policy is often closely integrated with other policies with wide-ranging goals – examples might include regional policy, energy and climate change policy, health policy and defence/security policy. We should stress that this integration of various objectives may possibly involve some trade-offs in the conduct of industrial policy.

III. MAPPING THE CONSTITUTIVE POLICIES OF INDUSTRIAL POLICY IN THE EU

Building on this definition of industrial policy, we can now turn to the concept of ‘industrial policy’ when applied in the EU. Figure 2 provides the mapping of the policies that can be considered part of this European industrial policy. The entire set of policies that directly and indirectly affect industry – understood as being not only ‘sectors’ but also ‘technologies’ and ‘tasks’ – will be discussed with the help of this visual framework. An approximate division of authority between EU level and Member States (national) level is also provided. When national level of authority is indicated, it may actually include a strong regional dimension that is not mentioned here. This is notably the case for EU countries with a high degree of decentralization (e.g., Belgium).

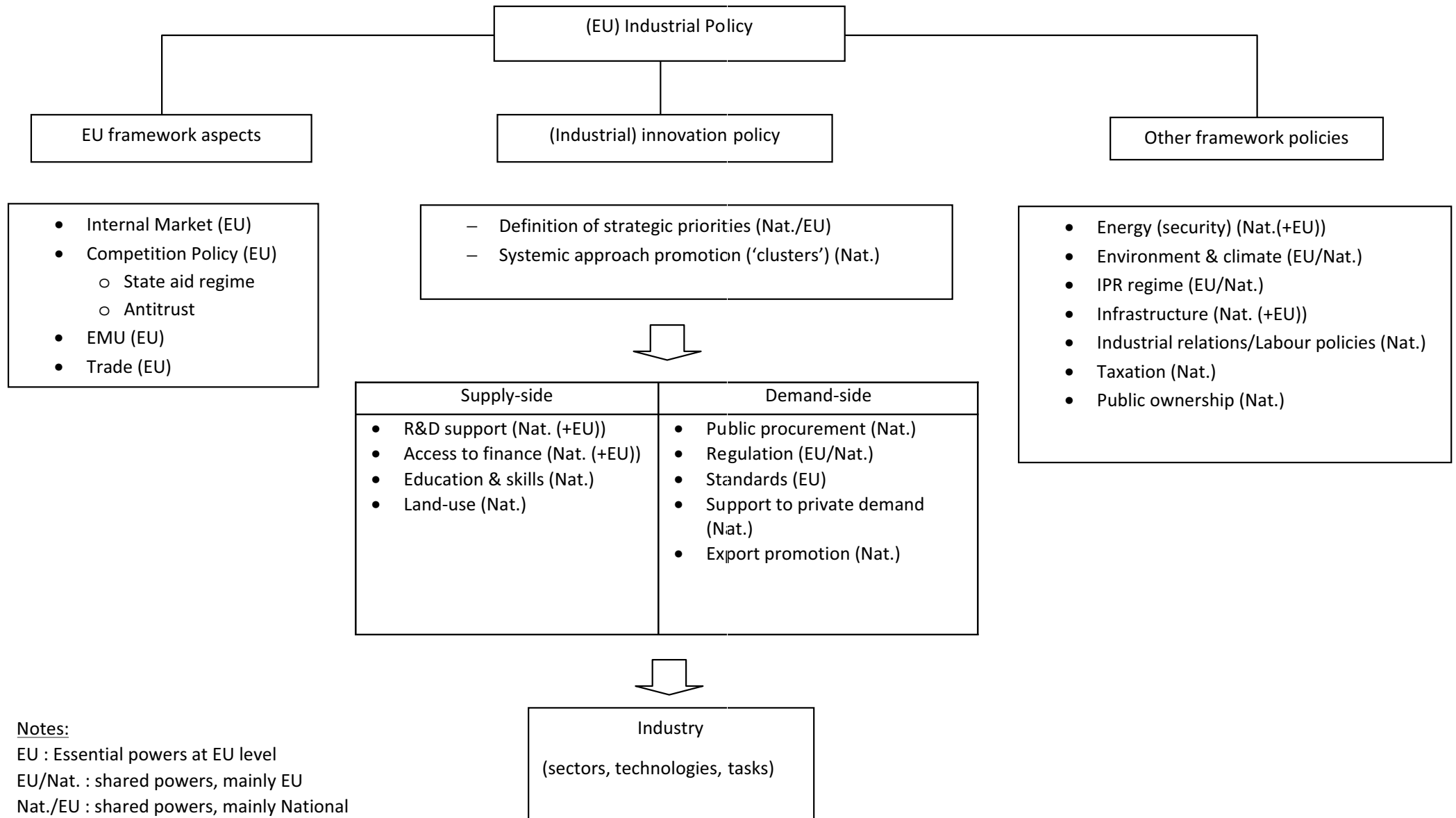
Figure 2 should thus be read as a high-level mapping of policies that impact a given sector (e.g., the pharmaceutical sector or steel industry), or technology (e.g., nanotechnologies or biotechnologies) or tasks (like design activities or production tasks). It serves to frame the extensive policy ramifications that matter for a specific industry (understood as a sector, technology or task).

The proposed mapping follows an original taxonomy that takes into consideration the definition provided in Part II. There are only a few taxonomies of industrial policy available in the literature, because – as discussed in Part I – there are many possible definitions of industrial policy. Some useful taxonomies include Weiss (2011), Cimoli et al (2009), Naudé (2010). The classification presented in Figure 2 is inspired by Pelkmans (2006), who is possibly the only author to have presented a visual taxonomy of EU industrial policy.

The mapping of policies, however, significantly differs from Pelkmans (2006) in two fundamental ways. Firstly, and in accordance with the definition provided earlier, the classification is widened by encompassing what we call the ‘framework’ policies, i.e., those affecting the ‘business environment’ or impacting in a relatively indirect way any given industrial sectors, technologies or tasks. Secondly, the framework presented here avoids the classical approach, which distinguishes between ‘horizontal’ and ‘vertical’ policies, and is too narrow given the definition of industrial policy we have chosen. Instead, it puts innovation policies at the core of industrial policy (centre in Figure 2).

We will first discuss the framework policies by distinguishing between EU framework aspects (a – left of Figure 2) and other framework policies (b – right of Figure 2). We will then turn to innovation policy (c – centre of Figure 2) – a central feature of industrial policy in the EU that aims to have a more direct impact on industry.

Figure 2: Mapping of the policies of industrial policy in the EU



Notes:

EU : Essential powers at EU level

EU/Nat. : shared powers, mainly EU

Nat./EU : shared powers, mainly National

Nat.(+EU) : national powers, marginal EU inputs or constraints



a. EU framework aspects

The 'EU framework aspects' are essentially derived from the core features of the EU's economic framework: an Economic and Monetary Union (EMU) and a Single Market flanked by competition policies. We can consider these to have a quasi-constitutional status for the EU because they are at the very heart of the European integration project. Trade policy is also an important exclusive EU competence in the economic domain. Setting these policy aspects aside from other framework policies, as in Figure 2, allows us to underline the central features of the EU that impact industry. This approach stresses what the EU *is* in economic terms rather than what it *could be*.

The **Single Market** (or Internal Market) is both a comprehensive concept and a core objective of the EU, underpinned by a strong legal basis and powerful institutional framework. A useful definition reads as follows: 'the free movement of goods, services and factors of production as well as right of establishment across intra-EU frontiers, accompanied by all necessary common regulation and/or policies for this internal market to function properly' (Pelkmans, 2006). The Single Market represents a fundamental choice of Member States for achieving economic progress. Article 119 of the Treaty on the Functioning of the European Union (TFEU) describes the internal market as being governed by 'the principle of an open market economy with free competition.' Following this liberal rationale, economic progress must be attained by virtue of market mechanisms. The principle of free movement – of capital, goods, services and, to a lesser extent, workers – and of free establishment (entrepreneurship and FDI) must spur innovation and progress. By agreeing to these fundamental principles of the EU, Member States have also agreed to limit their sovereignty.

Competition policy is essential in its support for the Single Market principles. Competition policy must ensure a level-playing field among market participants throughout the EU (i.e., ensure free competition). As specified in Article 3 of the TFEU, competition policy is an exclusive EU competence. However, national competition authorities play an important implementing role in lower profile cases that do not have an EU-wide character. The Commission (Directorate-General for Competition or DG COMP) must prevent anti-competitive behaviour in firms by monitoring mergers, potential abuses of dominant market positions, agreements between companies that restrict competition (cartels), and the support of governments for companies (state aid) all of which may distort free and fair competition in the EU internal market. Competition policy must ultimately promote the efficient allocation of resources and correct market failures.

Two dimensions of competition policy are most regularly debated in the context of EU industrial policy: state aid and merger control. By dictating the conditions for Member States' support to specific firms or sectors, state aid control obviously restricts the ability of governments to support their industries. But it is important to bear in mind that state aid may be tolerated under certain circumstances. While the

general rule of Article 107 of TFEU (1) stipulates that state aid is incompatible with the Single Market, the treaty's dispositions do leave some scope for national and regional governments to deploy supportive policies. Article 107 (3) notably allows state aid to be judged compatible if it meets a project of common European interest or facilitates the development of certain economic activities or of certain economic areas. Merger control is also regularly discussed in relation to industrial policy considerations. The Commission may indeed block the mergers of large companies on the grounds that the merged undertaking would benefit from a position of dominance on the EU market that could be conducive to abuses. Opponents of such decisions generally deplore that a 'European champion', able to compete at the global level, is thereby prevented from emerging.

The ***Economic and Monetary Union (EMU)*** has wide-ranging implications for the macroeconomic environment in which European industry operates. The EMU is here understood as a centralized monetary policy combined with some EU coordination of the decentralized fiscal and economic policies of Member States. The common monetary policy has important implications for industry. Although not an official policy target of the ECB, the exchange rate of the euro has fundamental implications for the competitiveness of the industry. Monetary policy is also fundamental in shaping the role of the banking sector – on whose credit the industry is traditionally very reliant in Europe. The relevance of a properly working financial sector is shown by the current bolstering of a banking union intended to reverse the financial fragmentation that characterizes today's eurozone.

The current EMU architecture thus ultimately constrains the economic and social policies that can be pursued by Member States. Most obviously, the EMU fiscal rules limit Member States' fiscal autonomy. Moreover, with nominal exchange rates between Member States now irrevocably fixed, eurozone countries have in essence renounced the possibility of resorting to competitive devaluations to increase the competitiveness of their exporting industries. Instead, national wage and price developments within Member States have become the adjustment variable for price competitiveness. When wages and prices increase beyond what productivity and growth prospects would suggest, the competitiveness of a (national) industry can erode in relation to its trade partners. The crisis in the eurozone peripheral countries has amply illustrated this dynamic.

By definition, **trade policy** has a specific impact on each exporting industry. However, after several GATT rounds, bilateral free trade area agreements and the European version of the Generalized System of Preferences, tariff protection is low overall. Consequently, efforts to increase trade liberalization have, for the most part, been focused on lifting non-tariff barriers. This is where trade becomes intertwined with other policies presented in Figure 2, notably intellectual property rights (IPR), standards, regulation and competition policy. Finally, on the defensive side of trade policy,

several instruments that comply with the WTO framework can be used (safeguards, anti-subsidy and anti-dumping measures).

b. Other framework policies

The 'other framework policies' box in Figure 2 contains policies which affect industry, but are not meant for industry alone. We distinguish these from the 'EU framework aspects' for three essential reasons. Firstly, these are policies that are not strictly bound to the EU's primary economic objectives. Secondly, most of these policies are largely pursued at national level. Finally, these policies can evolve more easily within the current EU Treaty framework. In other words, these policies impose fewer constraints than the EMU and the competition policy framework, and they are not as central as the Single Market. Unavoidably, some judgments were made here. Certain policy fields like infrastructure and energy do have links with the EU framework and in particular with the internal market.

Energy policy can have a significant impact on industry's input costs. Energy policy retains a strong national dimension. Although initiatives are being pursued at EU level notably to build a single market for energy, Member States are largely able to choose their own energy mix, and have only agreed to achieve the minimum amount of goals in terms of renewable sources. Energy security questions also vary greatly from country to country. Environmental and climate objectives are closely integrated to energy policies and affect industries – in particular in the most energy-intensive sectors. EU policies and instruments are very relevant, especially the Emission Trading Scheme and the targets pursued in the Climate and Energy Package (the 20-20-20 targets for 2020).

An **Intellectual Policy Rights (IPR)** regime is a major public instrument for stimulating innovation, and achieves this by conceding to and protecting the rights of innovators. This affects different industries in different ways. The recent, albeit belated, introduction of an EU patent highlights one domain where EU cooperation is increasing. Harmonization in copyrights and trademarks is also relatively high in Europe.

Providing **public infrastructure** (in network industries like transport, energy and communication) is a national matter; the EU only attempts to foster a European perspective by addressing the issue of 'missing links' and emphasizing the importance of greater overall network efficiency and cross-border network interconnections through 'TransEuropean Networks'.

Other relevant dimensions for industry include the national system of **industrial relations and taxation**. National labour/employment policies (including wage bargaining) are of major relevance for industry. And the taxation system directly affects incentives by shaping profits. Countless fiscal instruments can be used for a wide range of policies listed here. Notably, in many EU Member States, private R&D

is promoted by dedicated tax deductibility schemes. In some instances, tax policy can become central to a country's industrial policy when it is used as a dominant tool to attract business.

Finally, through its (national) **state ownership** policy, a country can act as a majority or minority shareholder of companies, or as an indirect investor (through public development banks, sovereign-wealth funds, pension funds or other vehicles). The EU Treaty is neutral regarding ownership (Article 345 TFEU). Member States are free to recourse to privatization (in particular following an EU-wide sector liberalization) or on the contrary maintain or enter equity stakes in firms. In doing so, Member States must, however, abide by state aid rules – in essence they must act as a private investor in a market economy, and not confer a state-owned firm with undue advantages that would distort competition. State ownership is probably one of the most tangible (and controversial) expressions of industrial policy. When pursued on an active basis, state ownership allows for the (at least partial) control of companies operating in sectors deemed of strategic interest. Such sectors typically include energy and defence, but can in some instances extend to manufacturing.

c. Innovation policy

Innovation policy is the core of industrial policy in Europe. Innovation policy is itself a set of policies and instruments that shape the conditions in which innovation flourishes. Innovation policy is typically considered to be mostly 'horizontal' in nature, with the aim of ensuring the right 'framework conditions' for the emergence of innovative activities and industries. However, some prioritization always exists in practice, both at national and European level. Resources are never infinite and strategic choices are necessarily made before they are deployed.

Strategic priorities are defined at both the EU and national level. At EU level, the European Commission's October 2012 communication on industrial policy defined six priority areas: (1) Markets for advanced manufacturing technologies for clean production, (2) Markets for key enabling technologies, (3) Bio-based product markets, (4) Sustainable industrial policy, construction and raw materials, (5) Clean vehicles and (6) Smart grids. Member States (or their regions) also tend to prioritize their action towards a limited set of sectors or technologies. Promotion typically occurs in the form of 'clustering policies', where a systemic approach to innovation is pursued. The term 'clustering' is used here in a broad sense to signify a platform where complementary innovation actors (public and private) interact to innovate and develop a comparative advantage.

'Clustering' most often refers to the grouping of diverse structures, including various public and private initiatives. The systemic articulation of innovation policies may bear other names: 'filières' (France), 'topsectoren' (Netherlands), 'Spitzencluster-

Wettbewerb' (Germany), 'pôles de compétitivité' (France, Belgium (Wallonie)), 'centres of expertise', 'innovation networks', 'competence networks,' etc. all represent some form of prioritization of innovation policies. The European Cluster Observatory has identified more than 2000 regional clusters in Europe. Again, such a sectorial approach has by definition a 'vertical' dimension; some sectors may be privileged and benefit from resources that would have otherwise been used differently.

Figure 2 – along the definition laid out in Part II – therefore ignores the classical horizontal vs. vertical approach, and instead embraces both concepts at the same time. The various policies pertaining more broadly to innovation policy are classified by distinguishing between demand-side innovation policies and supply-side innovations policies – to which we now turn.

The supply side of innovation policies

On the supply-side of innovation, the first and most prominent policy is to **support Research & Development (R&D)**. The funding of public research is one of the most classical instruments used both at national/regional level and EU level. Other instruments also support private investment in conjunction with the public sector (via Public Private Partnership). Public instruments used to promote R&D in the private sector typically include fiscal incentives or grants.

Access to finance is a broad and recurrent theme in industrial policy. Broad macroeconomic conditions affect how firms access capital, which makes monetary policy and financial regulation and supervision particularly relevant. But more targeted initiatives may facilitate innovative firms' access to finance. When funding by the market appears limited, public funding can be used, often as a catalyst for private funding. Both national public investment banks and the European Investment Bank (EIB) play a role in this respect. Many schemes notably facilitate access to finance for SMEs. Other initiatives can promote the development of capital markets, and in particular of risk capital and growth capital that can support young innovative companies in their development phase.

Education and the acquisition of relevant **skills (training)** are generally considered the most significant determinants of long-term growth. Human capital matters for economic development. In this respect, the education policies of Member States are central in promoting the acquisition of a set of skills relevant for innovation. First and foremost, science-based education determines the number and quality of scientists that can participate in R&D efforts – a key driver of innovation. But more generally, education systems determine how a workforce's competences match industry demand. Just think of the benefits of apprenticeship and vocational models, which are characterized by strong cooperation between the public education system and industry.

Finally, **land-use** policy is very relevant for the implementation of industries. Many innovation strategies involve the definition of special zones – geographical clusters – where the interaction between public and private stakeholders will be facilitated. Moreover, land-use policy is also central for the production and extraction of primary resources (raw materials) that are used as inputs by numerous industries.

The demand side of innovation policies

Demand-side innovation policies are generally understood as a set of public measures to increase demand for innovations, to improve conditions for the uptake of innovations, and to allow their diffusion (OECD, 2011). A useful definition by Edler (2013) follows:

Demand-side innovation policy can be defined as all public action to induce innovation and/or speed up the diffusion of innovation through (i) increasing the demand for innovation (i.e., the willingness and ability to buy and use an innovation), (ii) defining new functional requirements for products and services and/or (iii) improving user involvement in innovation production (user-driven).

On the demand side, the use of **public procurement** to support innovation is a prominent innovation-policy tool. With public procurement, public authorities can trigger demand by defining and signalling new functional needs to producers.

Regulation is another crucial tool that affects an industry's ability to innovate. Regulation encompasses safety, health, environmental and consumer protection considerations, which shape demand considerably. Complementarily, competitiveness tests run by the EU – impact assessment, evaluations and initiatives to reduce the regulatory burden (notably the REFIT programme) – demonstrate the attention the EU devotes to the impact of (over)regulation on the industry.

The **standardization** process also stimulates innovation by setting technological specifications. These standardized specifications allow firms to compete and innovate, on the basis of one specified standard. Regulation and standardization have close ties with the EU framework because the Single Market is the rationale behind most initiatives shaping regulation. In this respect, the basic insight is that the state can influence the rate and direction of innovation.

Next to public demand (procurement), authorities may **support private demand** at industry or final customer level. For example, tax incentives (at national level) can reduce the price of acquiring novelties or innovation. Furthermore, awareness campaigns can facilitate private demand by pointing out the security and quality of innovation. Labelling initiatives can raise consumer awareness of the merits of some products (e.g., in bio-based industries). The development of demand-led innovations can also be promoted by soliciting advice from innovation agencies.

Finally, although not generally thought of as innovation policies, we can mention **export promotion** initiatives as facilitators for developing export markets – i.e., addressing external demand.

IV. THE CHALLENGES OF INDUSTRIAL POLICY IN THE EU

a. Managing the scope of industrial policy

If, as proposed in this paper, industrial policy in the EU includes such a wide range of policies and instruments, one may legitimately question how meaningful ‘industrial policy’ really is in practice. The breadth of the concept risks losing, if not its strategic, then at least its operational relevance. Almost any public policy can find its way under the umbrella definition and into the policies listed in Figure 2. At a semantic level, there is also much potential overlap between ‘industrial policy’ and ‘competitiveness policies’, ‘innovation policies’, ‘enterprise policies’, or even the more generic ‘growth and employment’ strategies. In sum, from the definition proposed in Part II and the mapping of industrial policy in Part III, one may infer that ‘industrial policy’ equals ‘economic policy’.

In this sense, the concept of ‘industrial policy’ may seem little more than a ‘container’ in which almost any policy idea can be dumped. As Pelkmans (2006) puts it:

‘this nebulous approach acts as an open invitation for industrial lobbies and national ministers to argue attention to almost anything, resulting in a wave of fashionable topics... Another manifestation of this “container fallacy” is the unproductive repackaging and relabeling of instruments and policies.’

The evolution of the terms used by the EU institutions illustrates this claim. In the mid-1990s the term ‘industrial policy’ was out of fashion and ‘competitiveness policies’ took its place. The term ‘enterprise policy’ appeared by the end of the decade and, at a symbolic level, the Directorate-General for Industry was rebranded the Directorate-General for Enterprise. When political concerns about deindustrialization resurfaced, and ‘industrial policy’ reappeared in the early 2000s, the Commission settled for the Directorate-General for Enterprise and Industry.

This consideration should serve as a reminder that new political impulses and new instruments should be distinguished from existing policies that have merely been repackaged. The Commission communications on industrial policy tend to amount to a catalogue (drawn up by the DG for Enterprise and Industry) of all the Commission initiatives taken to support growth, jobs and innovation in Europe. In this way, the Commission mostly calls on Member States to act at national level, and to support and adopt its proposals in the Council.

Similarly, the European Council also regularly evokes the need for action by making a long list of the Commission initiatives already underway. The Pact for Growth and Jobs conclusions at the 28-29 June 2012 European Council were a good example of

the repackaging of on-going EU action while new means or instruments were largely neglected. The European Council of March 2013 conclusions on ‘EU industrial competitiveness and policy’ ran into the same pitfall. The overall message of such conclusions is that the Commission and Member States should pursue their work and efforts in all dimensions of relevance for industry.

However, beyond the varying semantic aspects and potential fallacies, there is a relevance in evoking industrial policy – precisely because it is such an overarching concept. This approach highlights the holistic dimension of policies relevant to industry. Policy coordination and the involvement of all stakeholders are most often key. Besides, policy objectives may involve trade-offs that require clear political commitment. In sum, the concept of industrial policy underlines the need for coherent action across a wide range of policies.

b. Ensuring coherence in the multi-level governance structure of the EU

A high degree of coherence across many policy fields is, in turn, particularly challenging to attain in the EU where different authority levels (EU, national, regional) are involved. It must first be stressed that the EU’s powers are relatively limited. This was depicted in Figure 2: most policies that are part of ‘EU industrial policy’ are actually not pursued at EU level but at national and regional level. The EU holds the most authority on matters relating to the EU framework aspects – in particular the Single Market and its regulations. Apart from its core of innovation policies, the EU has few ‘hard’ instruments to act on, and these are limited in size. Concrete financing means are quite limited. An estimated 16.5% of the EU Budget was dedicated to innovation policy over the period 2007-2013. Total EU spending on R&D represents less than 2% of the total R&D spending (public and private) (CEPS, 2010). When analysing the many EU policy documents on industrial policy, one should keep this fundamental limitation in mind. These documents tend to contain lengthy recommendations for what should be done (mostly at national level), but are relatively soft on concrete action and the use of EU financing instruments.

Additionally, if we focus on the EU level, we observe that the current institutional governance of industrial policy is particularly complex and fragmented. The wide scope of the concept of industrial policy means it comes as no surprise that many of the Directorates-General of the Commission have responsibilities for its implementation. The Directorate-Generals most directly involved include DG for Enterprise and Industry, DG for Research and Innovation, DG for Internal Market and Services, DG COMP, DG for Energy and DG for Trade. Even when it comes to instruments financing innovation, several Directorate-Generals may be in charge of programming and a multitude of committees and executive agencies involved. Following the same logic, several different Council configurations deal with industry matters. Most obvi-

ously reflecting the global dimension of industrial competitiveness, the Competitiveness Council deals with internal market, industry, research and innovation, and space. But other Council configurations also concern EU industrial policy, most notably the Transport, Telecommunications and Energy Council (TTE).

This complexity of governance indicates a need for policy coherence across many governance levels (EU and national) and across many policy fields. Policies and instruments should be streamlined at all levels for those sectors, technologies and tasks whose promotion is deemed a strategic priority for the EU as a whole.

The EU is facing major challenges in this respect. It first remains unclear whether everyone agrees with the industrial strategic priorities set at EU level. Following the economic crisis, the Commission defined some broad priorities for EU industry, but whether Member States actively consider them in their own strategic agenda remains to be seen. Without ownership at national level, no effective industrial policy can be orchestrated at EU level for matters of common interest. Greater understanding of policies' interactions and – whenever necessary – their coordination should be the constant preoccupation for all stakeholders.

Obviously, it is the Commission that should first and foremost lead coordination efforts. To ensure coherence of action across the EU, the Commission should monitor and actively guide national authorities – particularly regarding their innovation policies. The EU semester process is the most obvious procedure for voicing policy recommendations ensuring coherence. Further integration of innovation recommendations within country-specific recommendations is warranted. In this respect, the DG for Research and Innovation should try to increase its capacity to play a policy-oriented role beyond its traditional programming role.

At the same time, coherence between the EU and national/regional policy levels presupposes coherence at EU policy level. Many Directorate-Generals within the Commission are concerned with industrial policy. But, as the concept of industrial policy presented in this paper demonstrates, coherent action does not entail working in silos, with different parts of the administration remaining solely preoccupied with their own field of competences. The Commission should constantly consider the coherence of its actions towards the innovation policy it intends to promote within the EU. This includes considerations in the framework aspects of industrial policy, notably in trade, competition, regulation and standardization in line with the Single Market, IPR, regional policy, etc.

c. Approaching industrial policy beyond ideological misconceptions

If the evocation of industrial policy still tends to create such controversy, it is probably because of varying normative views on the role of the state in a market economy.

Ideology largely structures the public debate on industrial policy. To many, the mere mention of industrial policy brings up strong negative feelings about the state ‘picking winners’, and being inefficient in correcting market failures (and instead being prone to ‘government failures’) through direct top-down interventions.

But this controversy should not steer the debate on industrial policy. It is important to stress that, while the rhetoric on industrial policy may vary throughout Europe, the observed practice has largely followed the evolution of economic thought. Several authors have reviewed the development of industrial policy thinking over time (e.g., Sharp, 2001; Peres and Primi, 2009; Naudé, 2010a; Owen, 2012; Pryce, 2012). The graph taken from Naudé (2010a) usefully summarizes this evolution. From the 2000s onwards, we observe a greater reliance on a systemic approach to innovation, with a reflection on the role of institutions in an ‘innovation system’. Accordingly, the policy emphasis is now not so much on the correction of market ‘failures’ in a strict neo-classical framework, but on the correction of ‘systemic failures’ that would prevent innovation from flourishing.

Table 2: Evolution of theory and practice of Industrial Policy

Phase	Key ideas
1940s to late 1960s	<ul style="list-style-type: none"> – Industrialisation is necessary for development. – Market failures would prevent this from happening automatically. – Market failures are pervasive in developing countries. – IP is needed, particularly infant industry protection, state-ownership and state coordination.
1970s to 1990s	<ul style="list-style-type: none"> – Practical obstacles to Industrial Policy are considered significant. – Government failure is worse than market failure. IP is invitation to waste and rent-seeking. – Trade liberalisation (exports), privatisation and attracting FDI together with macroeconomic stability and minimum government interference are the basic requirements for growth and industrialization. – The era of the Washington consensus, especially after the debt crisis of the early 1980s and the ubiquity of structural adjustment programmes.
2000s to present day	<ul style="list-style-type: none"> – Market and government failures are present. – The ‘how’ rather than the ‘why’ of industrial policy is important. – Institutional setting matters but design difficult. Need to understand political context. – Flexibility in the practice of IP is important. – Differences exist with respect to the extent to which comparative advantage needs to be defined, not the principle. – Innovation and technological upgrading should be a central objective of industrial policy. – Promoting national innovation systems should be an important objective of IP.

Source: Reproduced from Naudé (2010a)

This modern rationale is very much practiced by governments throughout the EU. Official documents on industrial policy and innovation policy heavily borrow from the latest aspects of the evolution of economic thought. This is true for different European countries and regions, which all put forward fairly similar rationale.

Of course, if official discourse and practice of industrial policy are fairly similar, this is not to say that policy differences do not exist. Different countries and regions make different political choices. But practice in industrial policy does not vary as much as the typical, quite out-dated rhetoric may suggest. The heterogeneity in industrial policy practices in Europe tends to be overestimated. Not only do EU countries tend to follow fairly similar policy rationale, but they also all operate in the same EU environment – most obviously within the EU framework policies they've adopted (see Part II) – and are faced with similar global challenges.

Finally, given this paper's broad definition, European countries and regions necessarily pursue some form of industrial policy. When it comes to coordination of policies within the EU, it would thus be damaging for discussions on industrial policy to be polluted by misconceptions and ideology. This paper will hopefully enhance comprehension of the term and the policies it may imply. Alternatively, one may opt to not mention the words 'industrial policy' altogether. A more neutral wording such as 'economic policy' may perhaps prevent the unnecessary prejudice that the evocation of industrial policy tends to generate.

CONCLUSION

No matter how elusive the concept of EU industrial policy may seem, it is a significant one than can be of practical use for policymakers. In this paper we used a broad definition of industrial policy to reconcile varying normative views on the concept and make it applicable to different industrial policy practices observed throughout the world. Notably, our definition does not restrict ‘industry’ to manufacturing.

The chosen definition moreover implies that a vast range of policy fields and instruments can be considered part of industrial policy. We highlighted the way that these policy fields can be regrouped into three broad, approximate categories. Firstly, the essential policies constitutive of the ‘EU framework’: the internal market, competition policy, the EMU and trade. Secondly, some policies can be regrouped into ‘other framework aspects’: these are not meant for industry alone and are mostly pursued at national level, rather than EU level. This includes policy fields such as energy, environment and climate, infrastructure, IPR, taxation, industrial relations and state ownership. And finally, at the core of industrial policies we find ‘innovation policies’: which most directly shape the way innovation is promoted. Innovation policy is not limited to research policy – it includes a whole range of policies and instruments where the state’s initiatives shape the environment to support specific sectors, technologies and tasks.

The overarching nature of the concept of industrial policy comes with apparent downsides. If we include virtually all public policies that could have consequences for the economy, the concept may seem devoid of any operational relevance. In this sense, the concept would suffer from a ‘container fallacy’, characterized by successive unproductive repackaging and relabeling of instruments and policies into a ‘container’. At the semantic level, it is certainly true that the ‘industrial policy’ may strongly overlap – or not significantly differ – from other ‘container’ concepts such as ‘innovation policy’, ‘enterprise policy’, ‘competitiveness policy’ or ‘growth and employment’ strategy, or even ‘economic policy’. While reading EU strategic documents, Council decisions and Commission communications, one should bear in mind that genuinely new policy means should not be confused with the mere restatement of what already exists.

But beyond this potential pitfall, the industrial policy concept is useful for considering the need for coherence across policy fields and across levels (regional, national and EU). Industrial policy presents multiple dimensions and a complex governance structure in Europe. All EU countries (and regions) pursue policies that are constitutive of their industrial policy. This creates a lot of potential policy interactions across levels. It also calls for sound analysis and greater coordination whenever necessary. In particular, for those sectors, technologies and tasks whose promotion is deemed a

strategic priority for the EU as a whole, policies and instruments at all levels should be streamlined. The Commission has a role to play. It should not only ensure greater coherence of EU action but also better highlight any ways in which Member States' policies fail to promote innovation.

In sum, industrial policy is not a single policy that could target and solve all the economic and societal challenges the EU is facing. It is not an old magic recipe that would guarantee growth, if only we used it. The concept of industrial policy must essentially remind us that the EU, Member States and regions all pursue public policies that shape the evolution of industry. And that all these levels of authority are trying – usually for preselected sectors, technologies and tasks – to frame the conditions for innovation as the main driver for growth. Those efforts are real and tangible. Together these policies form the industrial policy of the EU. Integrating these efforts at the various levels and across policies as a coherent whole – a coherent industrial policy – should be the core preoccupation when we discuss the concept in the EU.

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