

The Revival of Industrial Policies in the EU?

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Abstract

This article provides an in-depth analysis of the evolution and current state of industrial policies in the European Union (EU) from the 1980s to the present day. We specifically focus on the resurgence of interest in such policies from 2020. We argue that industrial policies in the EU during the second half of the 2020s and into the 2030s will differ significantly from previous decades, while acknowledging challenges in fully understanding their scope and implementation. In particular, it is argued that the lack of a meaningful EU fiscal capacity constitutes the biggest challenge for the design and implementation of effective industrial strategies, which risks exacerbating regional and national disparities in the dual transition.

Keywords: Industrial Policy; EU; Green Transition; Digital Transition

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1. Introduction

The aim of this article is twofold. First, it provides an overview of the evolution of industrial policies in the European Union (EU, henceforth) from the 1980s until its current revival, explaining the reasons for the strong resurgence of interest after 2020. Second, it discusses the issues at stake and the main consequences—both positive and critical—that may result from this policy shift.

The remainder of this paper is organized as follows. Section 2 discusses the industrial policies in the EU until the Great Financial Crisis (GFC, henceforth). Section 3 discusses the changes that occurred in the 2010s. In Section 4, we analyze the international and European determinants of the changes in policy stance after 2020 and the initiatives undertaken within the Union. In Section 5, we conclude by critically assessing the new European industrial policies and discuss open questions, as well as the potential benefits and drawbacks.

The conclusion of this paper is that industrial policies in the EU in the second half of the 2020s, and as far as can be understood, in the 2030s, will be significantly different from those that prevailed between the end of the 20th century and the first two decades of the 21st. However, at the present stage, it is not possible to fully capture their actual scope, such as the instruments, and in particular the combination of initiatives by individual member states and at the Community level.

2. The Industrial Policies in the EU: From National Sovereignty to the Great Financial Crisis

Before delving into the evolution of industrial policies in the EU, it is essential to define the term. Industrial policies encompass a range of public interventions aimed at stimulating, incentivizing, and directing transformations in the productive structure of an economy, through a plurality of instruments.¹ While traditionally focused on manufacturing, these policies now extend to the more innovative and dynamic service sectors, especially those with a digital matrix, and all those activities in information and communication technologies, that blur the lines between the production of goods (manufacturing) and those of services.

Discussing industrial policies in the EU entails navigating a landscape of complex and partially overlapping areas of interest. On one hand, member states (or their regions) implement policies increasingly influenced by EU regulations, while on the other, EU institutions design their own policies. It is from the overlap, and, to some extent, the integration of these two levels that great interest in the topic arises. Industrial policies in the EU were the result of the interaction between the long process of European unification, the geo-political and international economic context, and national political orientations, evolving over time as a result.

¹ See, inter alia, Stiglitz et al. (2013), Cherif and Hasanov (2019), Aiginger and Rodrik (2020), Juhász et al (2023).

Until the signing of the Single European Act, industrial policies in Europe primarily manifested as substantial interventions at the national level, lacking significant coordination among countries. In Europe, a longstanding tradition of public interventions aimed at shaping industrial development dates back to the emergence of nation-states, echoing the ideals of influential figures like the French minister Jean Baptiste Colbert. Throughout the 19th and first half of the 20th centuries, these interventions were instrumental in guiding and accelerating industrialization processes, as well as the promotion of specific industries for military or technological advancement purposes particularly in continental Europe (first of all, Germany), where nations sought to catch up with British industrial and technological leadership. Public procurement and investment incentives were widely employed across European countries during this period. Additionally, the interwar era saw the emergence of direct public participation in corporate capital (state-owned enterprises), exemplified by initiatives such as the Institute for Industrial Reconstruction (IRI), established in Italy in 1933.²

In the post-World War II era, industrial policies gained renewed vigor driven by the imperatives of reconstruction, technological advancements, and the influence of post-war American leadership (Servan-Schreiber 1967). However, competition policies have been integral to European norms since the Treaty of Rome in 1957, which laid down fundamental provisions on antitrust, safeguarding competition within the common market. This was necessary since improper forms of business conduct or public support could distort the competitive outcomes of market integration. Despite these provisions, there was a prevailing consensus in the EU for a considerable period that member states had the freedom to implement policies supporting businesses within their borders. Only in the 1970s did EU policy coordination efforts start, focused on declining sectors, such as the steel industry (as seen in the Davignon Plan of 1977) and synthetic fibers (in 1978), aiming to manage production capacity rather than stimulate competition.

The prevailing political-ideological consensus during the mid-20th century attributed a decisive role to the State in guiding economic transformation, also driven by a keen interest in addressing social and territorial inequalities. This era was marked by significant challenges posed to economic systems as markets gradually opened to international competition, under the influence of Bretton Woods agreements promoting free trade. Concurrently, technological progress, spanning sectors from energy to fine chemicals to emerging electronics, presented new opportunities for growth. The context of the Cold War with the Soviet Union further underscored the need to bolster military-industrial efforts in Western countries. Antitrust regulations were notably lacking in many European nations. Germany led the way with antitrust measures in 1957, while France and Italy followed suit much later, in 1986 and 1990, respectively. In terms of production systems, European countries faced relatively limited integration despite growing trade flows of manufactured goods. Multinational presence remained low, with major national companies dominating oligopolistic sectors characterized by large-scale production or high technological intensity. Key industries, ranging from automotive to electronics and telecommunications, were often dominated by these national champions.

The outcomes stemming from this extensive and diverse array of interventions have yielded mixed results. In some instances, these policies have inadvertently facilitated the consolidation of market control positions or even monopolies among specific incumbent firms. Such outcomes were often

² For an in-depth discussion of the case of the IRI see Ciocca (2015) and Gasperin (2022).

intertwined with political power dynamics, potentially impeding the entry of new companies, and dampening overall technological innovation rates. Conversely, certain interventions have yielded significant successes, particularly in nurturing the emergence of new industries and technologies where private initiative was lacking in Europe as well as in the Asian experiences.³ Moreover, they have contributed to fortifying the European industrial apparatus, especially in comparison to their counterparts in the United States. Throughout the 1990s, a prevailing narrative of critical scrutiny toward industrial policies emerged, influenced by shifting political climates. However, recent research has presented a more nuanced understanding. This includes acknowledging both success stories, such as the establishment and triumph of the Airbus consortium, symbolizing a resurgence in European aeronautical production, and failures, as exemplified by experiences like the French Minitel.

Since the 1980s a notable change in perspective regarding industrial policies started. This was primarily due to one major shift in the stance of policies. An ideological approach progressively gained ground in European countries (first in the United Kingdom, then in the major continental countries) according to which market dynamics, without public influences, can determine the most positive outcomes in terms of production and technological dynamics (Milanovic 2019). This shift was facilitated by increasing integration into international trade, which fostered the belief that domestic production could be supplanted by accessing goods and services from global markets at competitive costs (Rodrik 2011). As previously mentioned, strongly negative judgments on the experience of industrial policies, especially from major international institutions such as the World Bank (World Bank 1995), also contributed to this shift.

The adoption of a market-oriented approach gained momentum with the implicit endorsement of the Single European Act of 1986 and was explicitly reinforced in the Maastricht Treaty of 1992. Since the 1980s, national authorities experienced a significant reduction in their discretion over industrial policy instruments as the principles of free market logic increasingly dictated investment decisions and spatial localization strategies. The impact of the Single Act was extremely significant. Its purpose was to achieve the four freedoms of movement within the Union, an objective that takes precedence over internal goals (Tsoukalis 2016). To this end, it was considered necessary to limit the powers of member states. Increasingly stringent limits were placed on the provision of State aid, and rules on public procurement were introduced to prevent the use of public demand (which accounts for one-sixth of domestic demand in EU member countries) to favor specific companies. This is achieved by imposing competitive tenders open to all Union businesses. The process of standardization and normalization in many important sectors bridging manufacturing and services (such as the GSM telecommunications system) contributed to the creation of an integrated market, where competition among companies intensified.

There were no rules preventing public ownership of companies, but limitations on subsidies and capital subscription (using methods other than those prevailing in the market) reduced the scope of action for public authorities. Politically, the Directorate-General for Competition of the European Commission gained an entirely new relevance, leading it to successfully clash with the most important member states of the Union in the 1990s. The Commission also intervened directly to create integrated markets in areas of great importance, ranging from energy and transportation to telecommunications. With the Maastricht Treaty, the comprehensive public budget rules further

³ For the main Asian experiences, see Johnson (1982) and Amsden (1989).

limited the intervention capabilities of member states. In several member states, the privatization of significant portions of publicly controlled firms was a result of both the new policy approach and the need to reduce public debt.

The European Commission has introduced a new framework for industrial policies within the EU, marked by a horizontal approach aimed at avoiding preferential treatment for individual companies or specific sectors. Instead, the emphasis was on providing general support for the business system, intending to promote an environment conducive to the development of businesses, particularly small and medium-sized enterprises (SMEs), and foster cooperation among companies. These interventions were designed to address positive externalities without distorting competition (European Commission 1993; 1995). A key aspect of these policies is the promotion of public intervention in financing pre-competitive research activities, aimed at enhancing the adaptability of European enterprises to ongoing transformations, particularly through innovation, research, and technological development. However, the responsibility for these policies and their funding still lay in the hands of member states, which had a much more limited operational capacity compared to the past, both due to new regulatory constraints and budgetary limitations.

Starting from the mid-1980s, European policies to support businesses were concentrated in two main areas: cohesion policies and Community policies for research, development, and innovation. The introduction of cohesion policies by the Community, alongside the 1986 Single Act, aimed to address economic disparities (strongly driven by the expansion first to the South and then to the East). As explained by Viesti (2019), all areas of member countries must benefit from European integration to be economically and politically sustainable. Therefore, cohesion policies represented one of the cornerstones of the European integration process. Also due to their very size, around one-third of the overall EU budget. Nevertheless, what emerged from 1986 onwards is a framework of tension between competition policies, on one hand, seeking to eliminate State aid, and cohesion policies, on the other, which uses State aid for territorial investment. The compromise found was the establishment of exceptions to the general prohibition on State aid in Article 107 of the Treaty, limiting the maximum intensity and geography of grant assistance and diversifying the ceilings of aid based on the size of enterprises, excluding certain productive activities. This led to the establishment of the 'State Aid Map', which ensures exceptions to the prohibition of interventions and is consistently updated. Under the umbrella of cohesion policies, the Structural Funds emerged as the primary financial tool for supporting businesses.

Another exception in the context of public intervention at the European level was driven by the need to catch up with technological advances compared to the USA and Japan. Research and development policies left to the member states were insufficient to address Europe's competitive gap with the US and cope with the development of new economies leading to a continuous movement of industrial relocation which was decisively affected by the rise of emerging economies, and particularly China. In this context, following the pioneering examples of programs such as Esprit (which was inter-governmental), the EU launched its own experimental programs and then merged them into the Framework Program, which, after being established in 1983, began to provide financial support for research and innovation policies of the EU. This exception was justified by the fact that research activity is considered a pre-competitive activity, thus not going against competition rules. In the following years, the program's objective evolved from promoting cross-border collaboration to true coordination of activities and policies at the European level

(European Parliament 2023). The ninth Framework Program (2014-20) was renamed “Horizon 2020” with an allocation of approximately 80 billion euros for funding research and innovation activities in the Union. Subsequently, with the 2021-27 budget, the Horizon Program was confirmed with a funding of 95.5 billion euros.⁴

Indeed, the only industrial policies implemented since the late 1980s revolve around cohesion policies and research and development policies. While the former is one of the strategic guidelines of the Union, namely territorial cohesion (which, in turn, requires the development of productive capacity), the latter emerges as a response to the loss of dynamism in the EU manufacturing sector, which suffered from technological competition from the USA, Japan, the arrival of Asia in global markets, and the subsequent process of delocalization.

A concise measure of the impact of these changes lies in the dimension of State aid granted by member states, expressed as a percentage of the Union's GDP: it decreased from approximately 2% of the GDP in the 1980s to half in the 1990s, further declining to around 0.5% in the years 2007-13. During this period, the levels reach a minimum in the United Kingdom and Italy, while being somewhat higher in France and Germany.

In this period analyzed, we have definitively entered a phase in which the fate of European productive capacity is predominantly determined by the choices of individual companies, without significant direction from public authorities.

3. The crisis period

It was only post-2008 that the EU witnessed some initial reconsideration of this framework. Following the GFC, adjustments in State aid and competition regulations were temporarily put on hold. This suspension becomes evident when observing the surge in State aid as a percentage of GDP, particularly in Germany (see Figure 1).

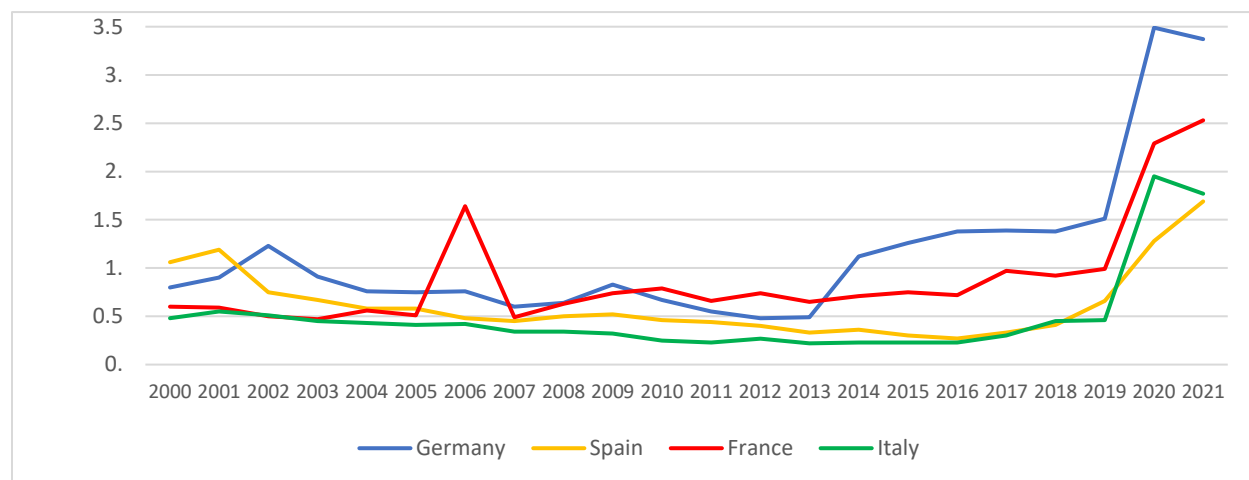
During the most severe period of the crisis (2008-11), the Commission adopted a Temporary Framework that relaxed State aid prohibitions for investments and facilitated access to credit for businesses. Overall, it enabled the disbursement of State aid amounting to €1.2 billion in 2009 to the automotive sector alone, which was combined with an unprecedented amount of public support granted through scrappage schemes of at least €4.0 billion, and loans by the European Investment Bank of €2.8 billion (Grigolon et al. 2012).

This cannot be considered at all a reversal of the prevailing approach, given that the European Commission quickly reinstated pre-crisis regulations (Schneider 2022). However, in the second part of the 2010s, after the conclusion of the period in which the Temporary Framework was in place, the first measures that signed some change in EU industrial policies began to appear. One example is the introduction of the IPCEI in Article 107(3)(b) of the Treaty on the Functioning of the European Union (TFEU, henceforth) in 2014 aimed to streamline the allocation of aid to

⁴ The funds are distributed to pursue three main objectives: i. support the EU's position at the forefront of the global science ranking; ii. assert industrial leadership in innovation; iii. address key issues common to all Europeans, distributed across six basic themes.

address identified market failures and pursuing objectives of shared EU interest (Tagliapietra et al. 2022).⁵

Figure 1: Evolution of State Aid (total) by country as a % of GDP



Source: Eurostat Data, author's elaboration.

The European Commission began to use a language and an emphasis different from past communications, although this had a generally modest effect on actual policies. For instance, in the Commission's communication from 28th October 2010 entitled “An integrated industrial policy for the era of globalization: Recognizing the central role of competitiveness and sustainability”, the Commission proposed to add sector-specific interventions to the horizontal approach, such as investment in technologies for sustainable mobility and targeting energy-intensive sectors (European Commission 2010).

A growing push came from major shifts in the international arena: the important growth in China's (and to a lesser extent in other Asian countries) share in world manufacturing production and exports; the processes of relocation of European production segments to emerging countries and the increasing import flows into the EU; the growing gap between Europe and the US and China in the new digital matrix technologies. The reorganization of the industry in the “core” of European manufacturing (Stöllinger et al. 2018; Viesti 2021), which leverages competitive advantages such as the low-cost labor force in the new member states and the affordability of energy imported from Russia, represented only a partial response. Across various European regions, including those traditionally associated with industrialization such as the United Kingdom, Belgium, and France, as well as Spain and Italy, deindustrialization processes accelerated. Some Mediterranean areas experienced “premature deindustrialization”: industrial activities started to decline before reaching a significant scale (Rodrik 2016).

⁵ It is worth noting that the Commission had previously established conditions for securing exemptions for IPCEI in both the R&D and innovation framework in 2006 and in the 2008 Environmental Guidelines (Traversa and Sabbadini 2022).

In 2019, a new boost came from Germany and France, who advocated for a new European industrial policy, launching a joint initiative for EU competition reform. Despite opposition, this signaled a reconfiguration of EU competition policy (Meunier and Mickus, 2020). The Franco-German manifesto stressed the need for national and EU policies to ensure global competitiveness, outlining specific proposals (BMW and MINEFI 2019). In November of the same year, Germany presented the National Industrial Strategy 2030 (NIS2030, henceforth). The German document proposed far-reaching, targeted, and strategic industrial policy interventions to selectively promote “breakthrough” technologies, to build “national and European champions” large enough to persist in global markets, to maintain and promote “industrial and technological sovereignty” by relocating global value chains, and to prevent foreign takeovers of key technology companies through stricter FDI screening and a “national holding structure” (Altmaier 2019). As explained by Schneider (2022), the NIS2030 can be interpreted as a response to specific crisis trends in Germany's accumulation regime, characterized by the great weight of the automotive and chemical industries, mechanical and electrical engineering, and small and medium-sized enterprises. Another factor that explains the release of the document is Germany's dual relationship with China, which represents both a vital market and a serious competitor (Guarascio et al., 2023).

A shift of significant relevance, which will be returned to later, is the intersection between an approach to industrial policies motivated by the need to strengthen the competitiveness of European businesses and the requirements arising from the increasingly pressing commitments that the Union is making, even in international fora, regarding climate change. It is increasingly evident that the spontaneous adaptation times of businesses are too slow in comparison to the need to counteract climate change, which is growing rapidly and relatively quickly (IPCC 2023). Notwithstanding clear resistances in some sectors directly affected by the need for ecological conversion, such as oil and gas; the green transition in areas such as transportation is beginning to portray a radical change in some key European industries, such as the automotive industry. Public authorities, to honor their commitments to the green transition, increasingly perceive the need to influence the transformation of businesses and promote the emergence of new production activities. One of the main driving forces for a shift in the competition-alone frameworks of the 1980s is a very strong stance from Europe's leadership in international climate and emission reduction negotiations that have spillovers to the industrial system, as is the case of the signature of the Paris Agreement in 2015, followed by the EU Green Deal, and finally by the ‘Fit for 55’ package.

Following all these developments, the European Council started to call for a long-term vision for industrial policies to address global competition and challenges related to digital transformation and the transition to a circular and climate-neutral economy (European Council 2019a, European Council 2019b, European Council 2019c). A significant push came in December of the same year, by the European Green Deal (European Commission 2019) stressing that the decarbonization of high-energy-intensive industries is one of its primary objectives. This involves the need to reduce greenhouse gas (GHG, henceforth) emissions from sectors such as steel, construction material manufacturing, and mobility. In particular, the EU has set the goal of achieving net-zero-emission in steel production by 2030. To reach these objectives, the EU decided to allocate investments targeted at regions most exposed to the negative repercussions of the transition, due to their dependence on fossil fuels or high GHG-intensive industrial processes. To promote circular economy and product sustainability, the EU has proposed (European Commission 2019) the

introduction of right-to-repair products to incentivize the production of sustainable, durable, and repairable goods (European Council 2019b).⁶ The EU also began to envisage the need to strengthen its industrial and strategic autonomy, reducing foreign dependence on critical materials, infrastructure, and technologies considered crucial for the dual transition (particularly important in the fields of cybersecurity, defense, and space).

4. The changes after 2020

The years following 2020 have witnessed a series of changes in the European and international scenario, profoundly altering the framework of reference for European industrial policies. This Section will attempt to recapitulate them.

The first trigger of change is related to the impact of the COVID-19 pandemic. The pandemic generated difficulties in international supply chains and operations, leading to shortages in semiconductor supplies that challenged the European automotive industry. The health emergency also illustrated the EU's vulnerability to the monopolistic power of large pharmaceutical companies producing vaccines while stressing the noteworthy contributions from public funds invested by States (Florio et al. 2023).⁷ Furthermore, during the pandemic, the role of public authorities in economic control grew. The NextGenerationEU (NGEU, henceforth) initiative was introduced, representing a groundbreaking approach involving coordinated investments across member states funded through shared debt backed by the European budget.

The outbreak of the war between Ukraine and Russia, and its consequences on international energy markets, prompted Europe to rapidly initiate the reconfiguration of its energy mix. This involved reducing dependence on gas and modifying gas supply sources. The international relations have significantly deteriorated, seemingly putting the German industrial model, based on an abundant and affordable energy supply from Russia, into a serious crisis.

The escalation of tensions between the United States and China, marked by American initiatives to restrict China's access to advanced technologies and the launch of various programs in the United States for green transition, technological capacity enhancement, and increased economic sovereignty, has highlighted the crucial importance of the availability of both semiconductors and the materials and natural resources necessary for their production. This holds for all productions related to green and digital transitions. Within this context, the key role played by the economy of Taiwan has become evident, as it is an island at the center of political tensions between China and the United States.

The exacerbation of international tensions has led, after the end of the Cold War, to a resurgence of the influence of strategic-military objectives and those related to national sovereignty, as

⁶ The Council and Parliament arrived at a provisional deal on the right to repair in February 2024 (European Council 2024).

⁷ Florio et al. (2023) analyze nine different vaccines and find that whereas companies invested 16 billion euros in research and production, states provided 30 billion euros in grants and advanced purchase agreements. The findings challenge the narrative of pharmaceutical companies bearing the most risk for the development of vaccines, arguing that there is a need for public intervention in research, development, and pricing decisions, emphasizing the importance of public control over the biomedical innovation cycle.

opposed to considerations of a strictly economic nature. The model of hyper-globalization appears to have suddenly entered a crisis, wherein it was possible to procure any product on the global markets at the lowest possible cost, irrespective of who produced it and where. The importance of having a national (or continental in the European case) production or at least the certainty of supplies from areas within the same framework of international alliances has grown. This shift is reflected in the concept of "friend-shoring" (U.S. Department of the Treasury 2022).

Within this framework, the European commitment to combating climate change has continued and intensified, both internally and on the international stage. The ambitious European plans for the green transition have increasingly intersected with proposals and initiatives aimed at strengthening European industrial policies. In this sense, there is a need to support the development of new renewable energy productions, especially wind and solar, and to increase initiatives for energy storage. However, this faces challenges due to the limited European production, particularly of solar panels.

All these changes are interconnected and signify a profound shift in the landscape of public policies. The primary element appears to be as follows: if in the past, industrial policies were mainly seen as a tool to enhance the competitiveness and innovative capacity of businesses, the evolving framework adds at least two additional dimensions. On one hand, there is the necessity to expedite the transformation of economies towards the green transition, with all the ensuing implications for the supply and demand of a wide range of goods. On the other hand, there is notably the intertwining of economic capacity and national sovereignty, within a context of deteriorating international relations.

In 2020, the Council of the European Union engaged in crucial debates regarding the recovery of European industry reiterating the need for an ambitious European industrial policy, viewed as the central pillar of the EU's recovery. As a clear reaction to the bottlenecks that emerged during the pandemic, EU leaders urged the Commission to identify strategic dependencies and propose measures to reduce them, particularly within sensitive industrial ecosystems, such as those related to health (European Council, 2020a). In November, the Council adopted conclusions considering the EU's plan for recovery to make European industry more dynamic, resilient, and competitive launching the first document related to the "New Industrial Strategy for Europe" (NISE, henceforth), which was updated in 2021 (European Commission 2020).

Later in the same year, motivated by challenges arising from networks of strategic dependencies within global supply chains in the COVID-19 pandemic, EU ministers discussed the need for a more inclusive and diversified network of supply chains for critical materials to ensure the resilience of the European industry in strategically important sectors such as pharmaceuticals and semiconductors (European Council 2021c). The demand from the ministers echoed in September when President Von der Leyen delivered a speech emphasizing the importance of technological sovereignty in the semiconductor sector (crucial for the digital transition), which particularly affected the automotive industry (European Commission 2021).

Later on, the NGEU was announced with a budget of 800 billion euros to support EU member states in recovering from the COVID-19 pandemic, especially those with significant structural

challenges and those severely impacted.⁸ The funds should be used to support investments in the green and digital transitions, as well as to strengthen economic resilience. The NGEU represents a unique and innovative experience of using the Union's financial capacity for policies aimed at green and digital transition closely related to industrial policies.

The experience of the NGEU has been of utmost importance, especially for its mechanism of raising funds in capital markets, using the EU budget as collateral, benefiting from the Union's credit rating, resulting in particularly low interest rates. As known, the measures of different national plans are defined by the member states, but there have been guidelines from the Union to allocate significant portions of the Plans to the dual green and digital transition. A governance model has been established, sharing certain key aspects between European and national authorities. Thus, the Plan finances, especially in countries receiving the most substantial amounts, significant interventions in support of firms. In the Italian plan, these interventions amount to approximately 50 billion euros⁹; however, a significant portion of these resources are allocated to automatic tax credits (Viesti 2023), without any conditionality; raising concerns about whether this instrument can effectively bring about the structural transformation of productive capacities, which is identified as a strategic objective of the U.S. American Recovery Plan.

It is important to note that stimulus packages adopted in the EU followed ambitious plans adopted in the US. The very strong stance of Biden's administration on proposing the “Build Back Better Plan” has shown to be a strong push in the direction of shifting the perception of the role of governments in industrial policies, increasingly connected with trade policies. The first piece of the plan, the “American Rescue Plan Act” of 2021, also known as the COVID-19 Stimulus Package, which is a comprehensive economic stimulus bill amounting to \$1.9 trillion was approved by the 117th Congress and signed into law on 11th March 2021 (U.S. Congress 2021a). The act was followed by a series of acts that intend to expand the US manufacturing sector and target its strategic autonomy: i. the “Infrastructure, Investment, and Jobs Act” of November 2021, amounting to \$1.2 trillion (U.S. Congress 2021b); ii. The “CHIPS and Science Act” of August 2022, amounting to \$280 billion (U.S. Congress 2022); and iii. the “Inflation Reduction Act” of August 2022 amounting to \$500 billion (U.S. Congress 2022).¹⁰

In the beginning of 2021, the Council and the Parliament reached a provisional agreement establishing the goal of a climate-neutral EU by 2050 and a collective target for a net reduction of GHG emissions by at least 55% by 2030 compared to 1990, which was later approved (European Council 2021b). Additionally, the Council and the Parliament approved a new lending instrument

⁸ The NGEU was approved in early May of 2021 by the Eurogroup of finance ministers and then in November by the Council and European Parliament. Part of the funds - €338 billion euros - is disbursed to member states in the form of grants. The other part - up to €385.8 billion - is financed by loans to individual member states (European Commission 2022f).

⁹ Including the resources from RePowerEU.

¹⁰ It is worth noting that the stimulus packages approved by the 117th Congress stand out for their substantial investments in place-based industrial policy (deliberate government interventions in specific industries aimed at transforming the economy, with a particular emphasis on targeting underdeveloped locations). As argued by Muro et al. (2023), nearly \$80 billion were allocated for these policies, which, in a historical context, can be interpreted as a significant resurgence after four decades.

to support the transition to a climate-neutral economy in the EU, especially in most affected regions (European Council 2021a).¹¹

Throughout 2022, the European Union engaged in extensive discussions and adopted numerous policies and initiatives aimed at ensuring the resilience and competitiveness of the European economy. This unfolded within a context marked by the imperative to adapt to the challenges posed by the green and digital transitions, as well as strategic dependencies and the impacts of high energy prices. It is interesting to highlight that the increase in energy prices preceded the Russian invasion of Ukraine. In fact, wholesale electricity prices started to increase at the beginning of 2021. This reflects a key flaw in the EU's reliance on market fundamentalism in its power sector which has led to significant failures in delivering security of energy supply and low energy prices for citizens and businesses (Varoufakis 2022).

Following the discussions that began in 2021, the Commission launched the “Chips Act” (February 8th), unveiling a set of measures with the objective of enhancing the resilience of the semiconductor ecosystem in the EU and expanding the global market share of semiconductors manufactured within the Union. The launching of the “Chips Act” was followed by the Russian invasion of Ukraine on 24th February 2022, which exposed one more critical dependence of member states on gas imported from Russia. As a reaction to the EU's stance trying to put an embargo on Russian gas and to the rise in energy prices initiated in 2021, on 18th May, the European Commission introduced one more package targeting another strategic dependence of the Union called “RePowerEU”. The plan aimed to swiftly diminish reliance on Russian fossil fuels and expedite the green transition (European Commission 2022a). The initiative was then followed by the establishment of the EU Energy Platform Task Force devoted to ensuring alternative supplies (European Commission 2022b).¹²

Finally, on 14th December 2022, the European Parliament and the Council reached a political agreement on the financing of REPowerEU, allowing member states to introduce REPowerEU chapters into their recovery and resilience plans (European Commission 2022f). On the following day (15th December), the European Council emphasized the importance of an ambitious industrial policy to safeguard Europe's economic, industrial, and technological base, mobilizing all relevant tools at the national and EU levels and improving conditions for investments, including through

¹¹ On 7th June 2021, the Council adopted a regulation establishing a €17.5 billion fund to make the green transition equitable and inclusive. The Just Transition Fund (JTF, henceforth) will finance projects that will reduce socio-economic costs for EU communities heavily dependent on fossil fuels or GHG-intensive industries and in need of local economic diversification (the total amount includes €7.5 billion available from budget commitments for 2021-2027 and €10 billion available from 2021-2023) (European Council 2021d). Member states will also contribute to JTF programs and will be able to transfer resources from the European Regional Development Fund and the European Social Fund, potentially mobilizing some 30 billion euros in investment.

¹² In addition, on 15th July 2022, the Commission approved the “IPCEI Hy2Tech”, the first IPCEI in the hydrogen sector. The project aims to develop innovative technologies for the hydrogen value chain to decarbonize industrial processes and mobility, involving 35 companies and 41 projects from 15 member states (European Commission 2022c). Again, in the energy sector, the Commission declared that it would expedite approvals for renewable energies (European Commission 2022d), besides launching a new industrial alliance to enhance EU solar energy and energy security (European Commission 2022e).

simplified administrative procedures, in line with the RePowerEU package and the European Chips Act (European Council 2022).

2023 began with an extraordinary European Council meeting on February 9th, where guidelines for the implementation of the industrial plan for the Green Deal were issued for the era of net-zero emissions.¹³ These guidelines include a simplified, swift, and predictable policy on State aid, the flexible use of existing EU funds to provide timely support in strategic sectors, the streamlining of administrative and authorization procedures, the promotion of European standards to facilitate the rapid introduction of key technologies, the development of skills necessary for green and digital transitions, and public and private investments to address investment shortfalls (European Council 2023b). Finally, in July 2023, the European Union successfully re-negotiated its energy targets, as detailed in the adopted Energy Efficiency Directive. The member states have committed to collectively achieve a significant reduction of at least 11.7% in final energy consumption by 2030 compared to the forecasts made in 2020 and to boost the share of renewable energies in overall energy consumption, targeting a substantial increase to 42.5% (the previous share was of 32.5 %) (European Council 2023b). To reach the targets that member states agreed on, the Commission launched the 'Fit for 55' package which is "a set of proposals to revise and update EU legislation and to put in place new initiatives" (European Council 2023c). The package encompasses 14 measures ranging from making buildings greener to the creation of a fund to support the most affected citizens and businesses. These measures are currently either under negotiation or have already been formally adopted as of today (February 2024).

In summary, the revival of European industrial policies is due to a set of interconnected factors, ranging from the loss of dynamism in the European manufacturing sector to the GFC, extending, more recently, to geopolitical tensions between China and the Western bloc and crises exacerbated by the COVID-19 pandemic, the Russian invasion of Ukraine, and the climate emergency. The recent turn in European industrial policy could constitute a response to these challenges, emphasizing sustainability (Green Deal/Fit for 55), innovation (Chips Act, RePowerEU), global competitiveness (NISE), and sovereignty in strategic sectors (Chips Act, RePowerEU) for the dual (digital and green) transition.

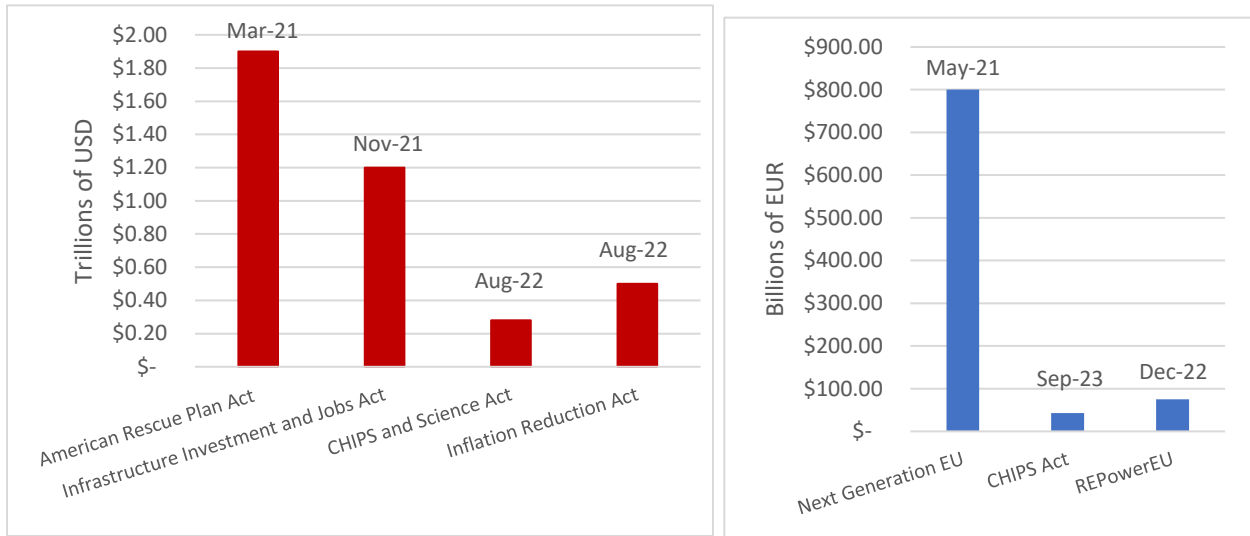
5. Open Questions

As detailed in the previous pages, as of 2024, there is a set of interconnected objectives for the "new" European industrial policies. What appears likely is that over the course of the 2020s, both the overall framework and specific policy instruments will change. It is still impossible to determine whether they will portray a new coherent industrial policy and to what extent these policies will assume strategic significance within the European context. This Section is devoted to discussing some of the open questions.

¹³ The extraordinary council meeting on February 9 was preceded by a visit to the United States by the French economy minister (Bruno Le Maire) and his German counterpart (Robert Habeck) to demand more transparency from the Americans in accounting for the amount of subsidies and tax credits that will be granted under the Inflation Reduction Act (IRA) introduced by Washington, so that European governments can respond (European Council 2023a). Opening, however, a State aid race that could hardly be contested on a level playing field.

The first critical element is that European policies often arrive late with a much smaller budget if compared to the United States: Figure 2 below compares the size of US and EU¹⁴ effort in 2021-23.¹⁵ This, not to mention China: according to Juhász et al (2023), in 2019 China devoted as much as 1.5% of its GDP to industrial policies.

Figure 2: New Plans in the US and EU (March 2021 to September 2023) (in trillions of USD and Billions of EUR)



Source: Authors' elaboration (various sources)

As an example, concerning the CHIPS Act, the funding provided in Europe is likely to be insufficient to achieve the stated goals. As argued by Timmers (2022), a single factory may require up to \$20 billion. To reach the EU's target of a share of 20 percent over the world's manufacturing production, total capital spending on semiconductors in Europe would need to be about \$164 billion (around four times the current budget). Moreover, it is unlikely that absolute strategic autonomy will be achieved, as dependencies on third countries related to the materials needed for advanced semiconductor production are likely to remain (Timmers 2022). Moreover, according to Moscoso del Prado (2023), the current instruments used by the EU suffer from excessive administrative and regulatory obstacles.

The overall EU budget is very small. The financial resources earmarked for supporting all policies represent just under 1% of the Union's GDP, with a substantial portion dedicated to sustaining historical commitments such as agricultural and cohesion policies.¹⁶ Owing to the intricate interplay of interests among member states favoring specific EU policies, changing the structure of the European expenditures has always proven to be a challenging task. At the same time, higher-

¹⁴ It is worth noting that of the total €300 billion in funding of the REPowerEU, €225 billion is taken from part of the remaining loans under the recovery and resilience facility (EUR-lex 2023). The remaining €75 billion (represented in Figure 2) will be provided by the Innovation Fund and by the sale of permits within the Emission Trading System (ETS) as outlined in the Fit for 55 package.

¹⁵ This disparity between the US and Europe is also reported in Romer (2021) and Ciaffi et al (2023).

¹⁶ However, as previously mentioned, cohesion policies finance at a regional level significant measures aimed at supporting firms.

income member states have consistently resisted augmenting the community budget, given the longstanding dominance of GDP-based resources in the revenue structure, which would entail a substantial increase in their contributions. Additionally, potential future enlargements of the Union may introduce new member states characterized by an exceptionally low per capita GDP, thereby making minimal contributions to the Union's resources, and reclaiming a substantial share of both agricultural and cohesion policies. Some optimism is vested in a radical overhaul of the revenue system, entailing the identification of autonomous resources for the EU. However, there is still no agreement; and in any case such a reform would not come into force before 2028.

Replicating the experience of the NGEU does not seem to be a possibility at the moment. The opposition from those member states that were already against the NGEU at the time when they accepted the Community plan only under the pressure of the COVID crisis is now stronger.¹⁷ There are also significant difficulties in Germany, due to the energy crises. The NGEU program will end only in 2026; and, understandably, there is a desire to verify its procedures and fiscal effects before replicating such a scheme.¹⁸ It is no coincidence that the Franco-Italian proposal for the creation of a European sovereign fund for strategic investments (Urso and Le Maire 2023) has been coldly received by EU partners. In a joint initiative (Urso and Le Maire 2023), Italy and France, expressing their commitment to a greener, more sovereign Europe, advocated for the establishment of an EU sovereignty fund to bolster industrial production capacity in key sectors, initially relying on existing resources.

Even in the field of industrial policies, contemporary Europe is suffering from the difficulties that emerge from its incompleteness: the absence of a meaningful EU fiscal capacity in the presence of a single currency and monetary policy (Saraceno 2020). This is an issue of the utmost importance, that requires a new political commitment, quite different from the current situation. It is not only the case of money for granting subsidies to firms: there appears to be no viable prospect for the establishment of new European institutions dedicated to research or capable of coordinating mission-oriented policies at the EU level. This includes the use of public demand interventions for innovation, regarding, for example, European scientific, technological, and production capacities for the green transition.¹⁹

In this context, the main direction could be - already underway - to relax the Community rules on State aid, leaving the member states much freer than in the past to intervene using their own resources. But this risks creating additional problems.

First, it links the capacity to intervene in industry to the amount of resources available in national budgets. In the European context of the 21st century, these risks produce significant disparities, such as those already evident in the dynamics of State aid in the years of the GFC and even more so in the more recent period. In particular, Germany would be, and is, able to mobilize much more

¹⁷ The so-called “frugal” member states: Austria, Denmark, the Netherlands, and Sweden.

¹⁸ Of some interest, for example, is the discussion of the "performance-based" features of the NGEU, which are different from the traditional ways of financing EU policies.

¹⁹ As mentioned, industrial policies are not necessarily synonymous of subsidies to firms. They rely on a plurality of instruments devoted to promoting large-scale joint public-private research projects, supporting with a mix of interventions the development of infant industries, and encouraging localized development of new economic activities with place-based policies (Juhász et al. 2023).

resources, in absolute value and relative to the size of its industry, than the other member states. Among the major countries, Italy would be in the opposite situation, with France in the middle.

This disparity is likely to endure in the light of the provisions of the new Stability and Growth Pact (SGP, henceforth) which is planned to enter into force in 2024. There are concerns that, regardless of the presence of some elements of novelty compared to the rules of the Fiscal Compact, the new SGP will not allow member states with higher levels of debt to finance public investments or contribute to private investments that are much needed for the green transition. This is particularly relevant if we consider, for instance, the radical shifts that will take place in the automotive sector, with the ban now established for the sale of vehicles with internal combustion engines. Member States will need substantial investments in the establishment of a charging infrastructure network and battery production, as well as in supporting the transformation of the system for manufacturers of components for internal combustion engines.

Second, greater liberalization of national State aid conflicts with the single market rules. As previously pointed out, the progress in the creation of the single market over the last forty years is closely linked to the objective of creating a level playing field for European firms and thus limiting the possibilities for member states to intervene in favor of their own companies. Giving back to member states the possibility of intervening risks distorting competition within the Union. If, as mentioned, one of the strongest motivations for the European industrial policies is the need to balance the interventions of the Chinese and American governments, doing so in this way, risks distorting competition in the internal market. There could be dangers of very serious friction within the Union.

Another major concern stems from the potential for global companies with considerable market power to exploit the situation. They could use their influence to pit member states against each other, effectively engaging in a bidding war to secure funding and negotiate the most favorable contractual terms. Of course, this same mechanism can also occur between Europe and the United States; but within Europe, in the presence of 27 member states, this "war of subsidies" could be far-reaching.

A recent case of great interest is related to the incentives provided by the German government to Intel (Deutsche Welle 2023), Northvolt (European Commission 2024), as well as €9.5 billion in subsidies for the purchase of two million electric cars (Clean Energy Wire 2023).

In June 2023 Germany and Intel have signed an agreement for the construction of a chip factory in Magdeburg, with the German government providing subsidies (amounting just under €10 billion, roughly one-third of the project's total value estimated to cost €30 billion) to support the development of computer chip and semiconductor facilities. Intel's project anticipates the creation of approximately 3,000 jobs, aiming to be operational by 2027 (Deutsche Welle 2023).²⁰ However, the greater liberalization of State aid has many serious disadvantages. The Swedish battery manufacturer Northvolt announced a new factory in Germany. Subsequently, due to the size of subsidies it could achieve in the US, considered delaying its planned factory in Germany and

²⁰ It is worth noting that the total investment in Magdeburg was planned to amount to €17 billion, with €6.8 billion sourced from German state aid. However, these figures have been later revised with Intel requiring €10 billion in state aid (Euractiv 2023).

announced a new plant in Canada in September of 2022 (Lindeberg 2022). To counter Northvolt's potential shift to the US, the European Commission approved a German 'matching aid' of €902 million in State aid to Northvolt to build an EV battery gigafactory in Heide, Schleswig-Holstein (European Commission 2024). These subsidies have obtained an exemption from the general prohibition on the basis that they would be of an amount equal to those guaranteed to the same company in the United States (Euractiv 2024; Euronews 2024; European Commission 2024).

Allowing member states free rein can also lead to suboptimal arrangements for the Union as a whole: the desire to establish productions within their borders in areas deemed key for the future, from batteries to electric cars, can result in duplications and overlaps of investments within the Union.

In general, the liberalization of State aid can significantly influence the location of new economic activities and the geographical configuration of new European production. As mentioned, the political compromise reached in the 1990s between territorial cohesion policies and competition policies was to refer to "State aid maps" that would grade the subsidies granted based on the level of development of individual European regions. A more widespread extension of exceptions to the general prohibition of aids can produce effects among member states and regions.

The location of new activities is particularly interesting because some of the technological areas of the "new" industrial policies represent significant disruptions with respect to the accumulation of knowledge and previous productive capacities. They could be less influenced by the localized accumulation of knowledge and path-dependency which condition the technological and productive development of the regions. One notable aspect of the several programs created by the Biden administration (such as the Infrastructure Investment and Jobs Act, Chips and Science Act and Inflation reduction act) is the inclusion of special incentives targeted to local economies that can benefit most from new industries, jobs, and economic opportunity (Parilla et al. 2024). This is to say that in the US the new industrial policies have a strong content of regional policies, aiming at reducing internal disparities.

Most of the new investment projects in Germany are concentrated in the Eastern part of the country. The crucial role of East Germany in the green and digital transition is evident through various initiatives in the federal states located in the former DDR, emphasizing the significance of the regional dimension of the new industrial policies.²¹

²¹ For instance, the Bundesländer of Mecklenburg-Western Pomerania and Brandenburg play a crucial role in the field of renewable energy, in particular, related to the hydrogen initiative (BMWK 2020) in the former and wind, solar, and biomass power in the latter. Brandenburg alone already generates more electricity from wind, solar, and biomass per capita than any other German *Bundesland*. Renewables cover 94 percent of the federal state's electricity demand, compared to Germany's national average of 46 percent (Miller and Chazan, 2022). The green transition is also the focus of the projects on electromobility, with Leipzig in Saxony and Grünheide in Brandenburg emerging as key centers (Fina et al. 2019). In the race for innovation, the cities of Magdeburg in Saxony-Anhalt and Dresden in Saxony stand out in the semiconductor sector (Fina et al. 2019; GTAI 2016). Dresden serves as a significant production hub with semiconductor factories operated by Infineon, GlobalFoundries, and Bosch (Clark and Satariano 2022). Additionally, the implementation of Excellence Clusters, with a focus on Berlin, Jena in Thuringia, and Dresden in Saxony, underscores East Germany's commitment to promoting centers of excellence in various sectors, thereby consolidating its fundamental role in the dual transition (BMBF 2019).

However, greater spatial spread of new investments is far from guaranteed. One has to keep in mind that especially the Mediterranean Member States do not have the financial possibilities of Germany: so that a possible decrease in regional disparities within Germany may happen in a general framework of increasing disparities in the Union. Moreover, the location of new, green, industries is not only influenced by subsidies. They require advanced infrastructures and quality research institutions; Rodríguez-Pose and Bartalucci (2023), for example, argue that the green transition could increase regional disparities to the detriment of less developed, peri-urban, and rural areas in Southern and Eastern Europe.

In the new framework determined by the radical transformation of the European energy sector due to the Russian-Ukrainian crisis and by the more general green transition itself, the localized availability of cheap energy, especially if produced from renewable sources can emerge as a new important locational factor, as shown by the experience of Northvolt in the North of Sweden. For the South of Europe this might represent a significant trump card, given the wide availability of both sunlight and wind.

All those issues should not be left to the autonomous decisions of Member States; they should, hopefully, be part of a more general European industrial strategy, taking care in the same time of the need to increase productive capacity and of benefitting all European states and regions; thus all European citizens.

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