

PRO-COMPETITIVE INDUSTRIAL POLICY

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Foreword

For the last 30 to 40 years, competition economists have been mostly sceptical towards industrial policy. However, recent global developments and challenges, and a number of serious crises, have led to large government interventions in many jurisdictions, driving a debate on whether there is a need to rethink the role of industrial policy in today's economies.

With the increasing use of industrial policy has come a growing body of empirical studies on its effects, some of which are (cautiously) favourable towards the effectiveness of government interventions through industrial policy.

These developments require a discussion on how to use industrial policy instruments, and, most importantly, how to make them pro-competitive.

Making or maintaining markets competitive increases the efficacy of industrial policy. In this regard, competition authorities can play a crucial role in strengthening the impact of industrial policy. They can, in an advising capacity, ensure that competition principles are a cornerstone of carefully designed industrial policy. Moreover, effective competition enforcement in key sectors targeted by industrial policy keeps markets more competitive, providing a strong basis for successful policy implementation.

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1 Introduction

Over the past few decades, there has been a notable resurgence in the interest in and utilisation of industrial policy by governments worldwide (see for instance Juhász, Lane and Rodrik (2023^[1])). Even though industrial policy – for this paper referring to the set of government interventions intended to improve structurally the performance of the domestic business sector (as per Criscuolo et al (2022^[2])) – was never fully abandoned by most governments, its prominence in many countries had waned in the late 20th century with the rise of neoliberal economic doctrines in market economies, emphasising minimal state intervention and market deregulation (Lane and Juhász, 2023^[3]).

The resurgence in recent years can be attributed to several factors that have compelled governments to intervene more actively in shaping industrial outcomes, including global crises, technological advancements, climate change, non-market practices and geopolitical tensions. The (increasing) use of well-designed industrial policy may help governments navigate certain complexities of the modern global economy and steer their industries towards sustainable growth and competitiveness.

In many situations, industrial policy may have an impact on competition and competition policy or vice versa. The relationship, between industrial policy and competition policy, is complex since their interaction may be complementary, neutral or in conflict with each other. At first sight, industrial policy implies government intervention, which may seem in stark contrast with the emphasis on market forces within competition policy. Looking more closely, however, industrial policy, through well-designed government programmes or strategies, can be supportive and respectful of competition, or even create or facilitate it. Moreover, competition policy (through advocacy and enforcement) can support industrial policy by ensuring markets are as competitive as possible. The way in which both policies interact depends both on their underlying objectives as well as on the exact design and implementation of both policies.

In many situations, the objectives of industrial policy overlap or align with the objectives of competition policy. However, in certain situations, objectives of both policies may not (fully) align, or instruments used for one policy may present challenges for the other. For instance, industrial policy can distort or prevent competition if it favours incumbents, picks winners, or props-up weak or “zombie” firms. At the same time, industrial policy may be necessary to achieve objectives that competition alone cannot achieve, especially if there are market failures that hinder markets from functioning well.

Another complicating factor is that the effectiveness of any domestic industrial policy, including its impact on competition, may be impacted by other jurisdictions’ actions in global markets (such as significant subsidies). Such actions in global markets (i.e. the use of, or room for, industrial policy in a jurisdiction) may depend significantly on the way in which competition policy is applied in different jurisdictions, possibly creating an unlevel playing field in international or global markets (Deffains, d’Ormesson and Perroud, 2020^[4]).

Given the importance of both policies for economic policy, including both their shortcomings, their potential negative (intended or unintended) consequences and possibly existing trade-offs between the two, a good understanding of the interplay between competition policy and industrial policy is important. This is especially true in light of the global developments and contemporary challenges that governments are faced with in recent years, and which may have caused views on industrial policy to shift.

This background paper will explore whether contemporary views on industrial policy require to rethink the views, approach and/or assessment of the relationship between competition and industrial policy and how competition authorities can play a role in designing effective, pro-competitive, industrial policy.

The paper starts, in section 2 with a discussion of what in this paper is understood to be industrial policy, given that there is not a commonly or universally agreed definition. The section also succinctly discusses the pros and cons of industrial policy as well as what increasing recent empirical evidence has concluded on its use. Section 2 ends with a brief recap of the objectives of competition policy to set the scene for section 3. Section 3 focuses on the interplay between competition policy and industrial policy. This includes a consideration of how industrial policy can create markets, increase or create competition, or can be designed at a minimum to be respectful of competition. Moreover, it describes how competition enforcement can actively support industrial policy by making or keeping markets competitive. Section 4 discusses the (potential) role competition authorities can play when it comes to the design and successful implementation of industrial policy going forward. Section 5 concludes.

2 Industrial policy, competition policy and their objectives

Despite the growing prominence of industrial policy in recent years, industrial policy is by no means a new phenomenon. Governments have always used industrial policy, in some shape or form¹, although focus and type have changed significantly over time. Industrial policy most often provokes a polarised debate, with proponents arguing that strategic government intervention is essential to foster economic growth, innovation, and competitiveness, and opponents claiming that government intervention is inefficient, if not wasteful, distorts markets and comes with rent seeking (see for instance Andreoni and Chang (2019^[5]) and Warwick (2013^[6])).

Examples of both successes and failures exist. Examples of industrial policy that are often considered successful refer to, for instance, different United States (US) government programmes (e.g. DARPA²) that funded key innovations behind the information technology revolution (Mazzucato, 2021^[7]; 2015^[8])³, Germany's Industry 4.0 which aims to promote digitalisation of manufacturing processes and integrate new technologies (Schroeder, 2016^[9]), and the "East Asian Miracle", which refers to the economic growth of several East Asian countries, arguably largely facilitated or driven by government intervention (Box 2.1).

However, opponents of industrial policy like to refer, for instance, to the Concorde project, the failed attempt by the French and British governments to develop a supersonic passenger airliner, and Solyndra, a solar power panel start-up that went bankrupt about two years after it received a USD 535 million guaranteed loan from the U.S. Department of Energy (Mazzucato, 2015^[8]).⁴

¹ Nester argues that "[e]very nation has industrial policy, whether they are comprehensive or fragmented, or whether officials admit the practice or not" (Nester, 1997^[88]).

² The Defense Advanced Research Projects Agency (DARPA) inside the US Department of Defense (DOD) is often referred to as an exemplary model of executing industrial policy due to its focus on fostering innovation and technological advancements.

³ DARPA's investments in the 1960s ultimately led to the internet, while GPS was funded by the US Navy, Siri (also) by DARPA and touchscreen display initially by the CIA (Mazzucato, 2021^[7]).

⁴ Even though, in the same year that the US government invested in Solyndra, Tesla also received approval for a similar loan, and Tesla was enormously successful, repaying its loan four years later (Mazzucato, 2015^[8]).

Box 2.1. Industrial policy and the East Asian Miracle

During the latter half of the 20th century, several East Asian jurisdictions – most notably the “four Asian Tigers” (Korea, Chinese Taipei, Hong Kong (China) and Singapore), Japan, Indonesia, Malaysia, and Thailand – experienced a remarkable export-oriented economic growth, including rapid industrialisation, technological advancement and significant improvements in living standards. These nations transformed from low-income agrarian economies to high-income industrial powerhouses within a relatively short period.

Many argue that industrial policy, or “heavily interventionist industrial planning”, has played a crucial role in this development. Targeted government interventions aimed at fostering the growth of specific industries deemed strategically important for economic development would have provided the necessary support and incentives for domestic industries to invest in innovation, upgrade their technology, increase productivity, and compete effectively in global markets. The interventions ranged from investment in infrastructure and education to the provision of subsidies, cheap credit, tax incentives, and protective measures such as tariffs and quotas. The overarching objective was to create a conducive environment for domestic industries to flourish, compete internationally, and drive economic growth.

Several lessons can be drawn from the East Asian experience, including the crucial roles of a competent and politically insulated implementing bureaucracy as well as conditionalities for reception of the aid.*

However, also for this example, sceptics exist. They argue that attributing the region's success largely or solely to government intervention oversimplifies a complex phenomenon. They contend that other factors, such as cultural values, geography, and historical circumstances, played significant roles in driving economic growth.

More recent empirical work studying the East Asian experiences suggests that while industrial policy have been powerful in driving structural change in these countries, general lessons for other countries today are challenging due to the importance of specificities and local and contemporary circumstances.

Note: *See for instance Chang, H. (2006), “Industrial policy in East Asia: Lessons for Europe”, *EIB Papers*, ISSN 0257-7755, *European Investment Bank (EIB)*, Luxembourg, Vol. 11, Iss. 2, pp. 106-132.

Sources:

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Chang, H. (2006), “Industrial policy in East Asia: Lessons for Europe”, *EIB Papers*, ISSN 0257-7755, *European Investment Bank (EIB)*, Luxembourg, Vol. 11, Iss. 2, pp. 106-132

The already rich history of industrial policy, combined with the new impetus in recent years, has led to an extensive, and fast growing, body of literature discussing the merits of industrial policy. This section will not try to provide a comprehensive review of this literature, nor take a position on the merit of implementing industrial policy. Instead, it will try and briefly summarise some key points and recent developments, where possible referring to other literature for further reading, to set the scene for an analysis of the interplay between industrial policy and competition policy (in section 3).

2.1. Industrial policy's definition and rationale

2.1.1. The definition of industrial policy

Industrial policy is a broad term that can encompass a wide range of policies. In fact, despite the fact that industrial policy is by no means a new phenomenon, there is not a commonly or universally agreed definition of industrial policy. Definitions of, and rationales for, industrial policy have evolved significantly over time.

The OECD has worked extensively on this topic, including related policies and policies or instruments that can be considered a part of industrial policy. Consequently, the OECD has developed a framework⁵ for analysing the formulation of industrial policy (Criscuolo et al., 2022^[2]) as well as a taxonomy of government support measures (OECD, 2023^[10]). This background paper will follow the working definition of industrial policy in Criscuolo et al (2022^[2]), namely “*The set of government interventions intended to improve structurally the performance of the domestic business sector*”. This implies a broad definition that comprises a vast set of instruments, but excludes macroeconomic policies (i.e. fiscal, monetary and macro-prudential policies), which do not fall within this defined scope of industrial policy because they address the business cycle and not the structural performance of the business sector.

Industrial policy also differs from industrial planning, which can be defined as an intentional economy-wide aggregation of and co-ordination among individual industrial policies (Tucker, 2019^[11]).

2.1.2. Types of industrial policy

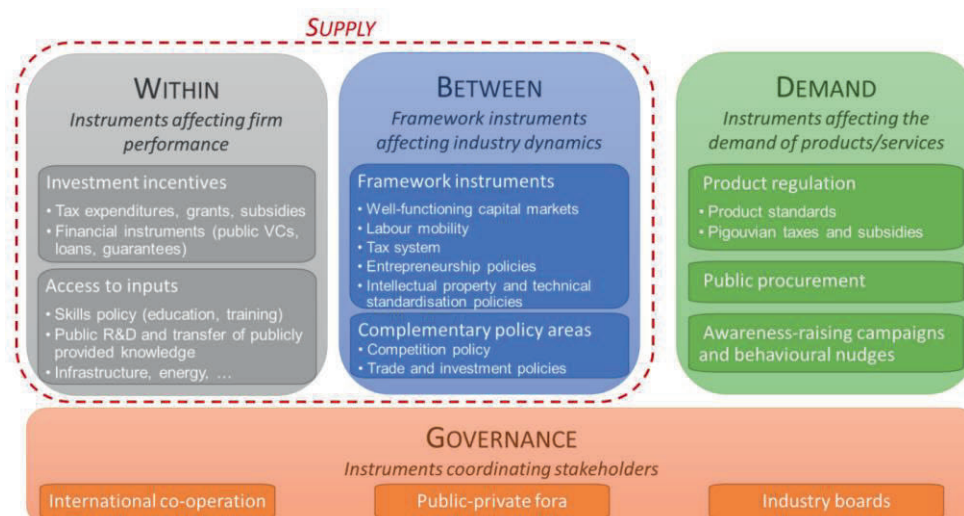
Governments can implement industrial policy through a large number of available policy instruments. Due to the multi-dimensionality of industrial policy, different taxonomies exist to cluster or describe such instruments.⁶ A classical distinction is between horizontal and vertical (or targeted) industrial policies, even if horizontal policies in practice can also have a “vertical effect” because of its implementation or impact (for instance by disproportionately benefitting or hurting a select number of firms or sectors). Horizontal policies are available or applicable to all firms, irrespective of their activity, technology, or location (Criscuolo et al., 2022^[2]). Examples of instruments that are horizontal are R&D tax credits to stimulate investment in R&D or fiscal incentives to support the green transformation of businesses. Targeted policies are restricted to a subset of eligible firms based on their activity, their technology or location, e.g., public procurement for specific products; or place-based policies.

The OECD framework for industrial policy (Criscuolo et al., 2022^[2]) provides for a taxonomy of policy instruments (see Figure 2.1), adopting a broad scope.

⁵ This policy framework is based on a distinction between the design of industrial strategies and the selection of industrial policy instruments. Strategies are viewed as consistent and articulated group of policy instruments aimed at achieving a given policy objective, while instruments are defined as tools used by policymakers to affect performance outcomes in the business sector to achieve such objectives.

⁶ Dimensions that could be relevant for a taxonomy are (i) the objective, (ii) the target group (e.g. specific sector or stage of the value chain), (iii) the rationale (e.g. market failures), (iv) the policy domain (e.g. product markets or factor markets, trade, entrepreneurship), or (v) the policy orientation (e.g. horizontal/vertical) (Warwick, 2013, p. 17^[6]).

Figure 2.1. Taxonomy of industry policy instruments



Source: (Crisuolo et al., 2022^[21])

The framework builds on another mainstream distinction, namely between supply-side instruments – which affect domestic production decisions, regardless of where consumption takes place – and demand-side instruments – which affects domestic consumption decisions, regardless of where production takes place.

Within the supply-side instruments, the framework distinguishes ‘within’ instruments, affecting firm performance, from ‘between’ instruments, framework instruments affecting industry dynamics. Firstly, ‘within’ instruments enable to share the costs and risks that businesses face due to knowledge externalities and information asymmetries with the public sector, fostering investment incentives into firms. Examples are cost-sharing instruments such as production subsidies, production-related tax expenditures (e.g. foregone tax revenue or tax credits) and risk-sharing financial instruments such as loans or guarantees. Secondly, ‘within’ instruments can increase the firm’s performance by providing efficiency-improving inputs, such as skills and knowledge. ‘Between’ instruments include framework conditions that affect the reallocation of production factors towards a more productive setting, leading to efficiency. They include instruments related to capital markets, labour mobility and tax systems, as well as complementarity policy areas such as competition and trade policy.

Demand-side instruments aim to incentivise domestic consumption by either influencing price, availability, or public demand of specific products and services (Crisuolo et al., 2022^[21]). Instruments include product standards, a Pigouvian tax such as carbon pricing or public procurement which provides a “testcase” for a new product.

Finally, governance instruments, which complement and oversee the already mentioned instruments, co-ordinate stakeholders among research institutions, private and public sector. For instance, international co-operation can increase complementarities and prevent unintended effects, while public-private co-ordination is key for targeted policies to reduce co-ordination failure by producing knowledge on technical issues, justifying mission-oriented interventions.

In practice, governments use combinations of aforementioned industrial policy instruments, and develop more complex industrial strategies.

2.1.3. The rationale, objectives and potential risks of industrial policy

Similar to the question of “what” is considered industrial policy, the reasoning behind – and appetite for – industrial policy (or “why”) has also changed significantly over time, heavily influenced by the emergence of new economic challenges, shifting economic ideologies, geopolitical developments and global market integration between countries with different economic systems. In recent years, the reticence to (openly) utilise industrial policy seems to have been lifted in many countries. A distinction can be made between the economic rationale of industrial policy (the underlying justification) and the objectives (or specific goals or outcomes) that policymakers try to achieve.

The economic rationale(s) of industrial policy

The rationale provides for a justification of using industrial policy. The classic justification for industrial policy in mainstream economics is that it remedies market failures (Crafts and Hughes, 2013, p. 6_[12]), i.e. situations where the market inefficiently allocates resources (raw materials, labour, land and capital) due to various circumstances. Traditionally, four types of market failures are distinguished: market power (or failure of competition), asymmetric information, externalities, public goods (CNMC, 2021, p. 23_[13]). However, Juhász, Lane and Rodrik (2023_[1]) divide the rationales for industrial policy in (i) externalities, (ii) co-ordination failures, and (iii) public goods.

Externalities are present when the production or consumption of a good affects (positively or negatively) the utility or benefit of another economic agent, without that impact being reflected in the prices or costs. Examples of externalities that have been used as rationale for industrial policy, are:⁷

- **Informational externalities.** The presence of informational externalities means that the private costs and benefits of acquiring or sharing information do not fully reflect the social costs and benefits. An example is research and development (R&D) or technology spillovers that occur between industries, regions (or even countries). Consequently, the market may undersupply innovation, since the developer of the R&D or new technology cannot capture all the benefits.
- **External economies of scale** refer to the increase in productivity due to the growth of the industry as a whole or the clustering of firms in a particular geographic region. Such advantages can include shared infrastructure, a more extensive labour pool with specialised skills or easier access to suppliers and customers. External economies of scale are not specific to individual firms but benefit the industry collectively, leading to lower average costs for all firms involved.
- **Learning-by-doing:** learning-by-doing (also referred to as the “infant industry argument”) suggests that sectoral productivity increases as firms gain experience, acquire knowledge and improve processes over time. Such experience, knowledge and improvements can result in spillovers that benefit other firms in the same industry, lowering their production costs (intra-industry learning-by-doing externalities, (Stiglitz and Greenwald, 2014_[14])).
- **Environmental externalities** refer to activities that generate unpriced externalities on the environment, such as pollution or resource depletion.
- **National security externalities** refer to the reduction of dependence on a foreign source of supply – e.g., rare earths or semiconductor inputs – which can make a country more secure (Juhász, Lane and Rodrik, 2023_[1]). An example is microchips needed for a wide range of electronic devices, including those important for national defence and security, such as communication infrastructure, cybersecurity technologies and military systems.
- **Good jobs externalities** exist when creating middle-class jobs produces greater social cohesion and alleviates social ills such as crime and drug addiction (Rodrik, 2022_[15]).

⁷ See e.g. (Criscuolo et al., 2022_[2]).

Co-ordination failures occur when individuals or companies fail to co-ordinate their actions to achieve mutually beneficial outcomes. Several of the contemporary, acute and complex, challenges, such as the twin transition,⁸ require firms to do completely different things or do things completely differently. Firms may be very reticent to invest in a new technology or product because the benefits of such investment are highly dependent on the likelihood or willingness of others to invest in complementary or related technologies. Without government intervention, co-ordinating investments, such investment would not take place.⁹

Finally, public goods or services affect private production, such as education, appropriate regulation, law and order and infrastructure. Because individuals benefit from public goods without paying for them, there is little incentive for private firms to produce and supply these goods in the quantities desired by society. Government intervenes by providing or subsidising the provision of such goods with the aim to ensure that they are provided in socially optimal quantities, maximising societal welfare. Even though public goods are usually not addressed through industrial policies, exceptions exist. For instance, needs of producers are oftentimes highly specific to the nature or location of their activity. When governments make a conscious choice to invest in certain public goods (for instance infrastructure such as a port) – benefitting a type of firm or industry – instead of others, this can be considered industrial policy (Juhász, Lane and Rodrik, 2023^[11]).

Objectives of industrial policy

Given a certain rationale, different objectives can be at the heart of implementing industrial policy. Industrial policy is most often evaluated against metrics of economic growth and productivity (Criscuolo et al., 2022, p. 9^[16]) or growth and development (UNCTAD, 2023, p. 1^[17]). Moreover, a multitude of other, still fairly traditional, objectives exist, including the improvement of innovation, competitiveness, employment and inclusiveness. Other (less positive) objectives may be (implicitly or explicitly) using state-supported efforts to achieve international or global market dominance in strategic sectors.

Contemporary industrial policy has increased the focus on new or altered objectives, in part to address (some of) the contemporary issues (which will be discussed in the next section 2.2), such as to increase resilience and strategic autonomy, lower inequality and promote the climate and/or digital transition. For these more contemporary objectives, while the objective of economic growth and competitiveness is most often still clearly present and important, the overall (bundle of) objective(s) may be more complex.

It is in this context of complex and multifaceted societal challenges that some call for industrial policy to be bold and oriented towards specific and ambitious goals by creating or shaping markets. Notably, Mazzucato (2015^[8]) argues that governments, given their historically instrumental role in bringing about transformative change through the development of disrupting technologies, should envision a direction for technological change, invest in that direction and create a network of firms that are willing and able to follow that direction. The argument goes that governments can be more daring or may be willing to take more risk than private companies, especially when such risks are too high or diffuse.¹⁰ Importantly, such directions are not generated spontaneously from market forces, because markets are “blind”: they often do not take into account societal or environmental concerns (Mazzucato, 2015^[8]).¹¹ Next to such

⁸ The technological/digital and green transitions.

⁹ A much-used example with regards to such requirement for co-ordination is that of electric cars, and the fact that electric cars are only interesting to produce if there are batteries and charging stations, and vice versa. See for instance a study by the CMA (2021^[106]), which addresses the importance of (and way to) developing a comprehensive and competitive electric vehicle charging network.

¹⁰ Moreover, importantly, in order to do this, they should be able to reap the benefits of successful investments (Mazzucato, 2015^[8]).

¹¹ Building on this, Hughes and Spiegler (2023^[21]) describe the witnessing of “a new embrace of a policy approach known as “*marketcrafting*”: the creation and implementation of frameworks of market governance and public investment to pursue certain

“blindness” of markets, technological development tends to be ‘path dependent’; a situation where past decisions or outcomes determine future technological development (options).¹² This results in firms continuing to innovate or invest in the direction in which they have (always) innovated or invested in the past, including in the possibly “wrong” direction from a societally preferred perspective. For instance, empirical research has shown the phenomenon of path dependence to be present in relation to the green transition (Aghion, Boulanger and Cohen, 2011_[18]). Firms with a history of innovation in polluting technologies tend to continue in that direction, while firms with a history of innovation in clean technologies tend to continue along this path. Industrial policy tools may be required to make firms switch to investing in greener alternatives.

While Mazzucato (2021_[7]) argues that governments should go beyond ‘just’ fixing market failures and instead create entirely new markets, others contend that solving market failures and creating or shaping markets are not inconsistent. For instance, positive externalities or co-ordination failures related to firms not entering a market may lead to markets underproviding the optimum allocation or markets not even existing. In this sense, fixing a market failure would imply creating new markets and new sectors (Cherif and Hasanov, 2019, p. 25_[19]).¹³ Moreover, (Lane, 2021_[20]) argues that “*mission-oriented policies do not absolve us from having to think about details [and the identification of] market failure remains an indispensable tool*”. Whether it relates to fixing market failures or creating markets, it is crucial for industrial policy to harness the power of market forces in the pursuit of social and political goals (Hughes and Spiegler, 2023, p. 5_[21]).

Risks of industrial policy

Notwithstanding the economic rationale of industrial policy and its broad and multiple objectives, the literature also points at risks of industrial policy, including:

- Governments are poor at picking “winners” – this refers to the notion that governments struggle to accurately identify which industries, companies, or projects will be successful in the marketplace. The presumption is that governments do not possess sufficient and/or the proper information to make the correct decisions and the market would be superior when it comes to assessing potential commercial success. Consequently, when governments decide to pick a “winner”, this most often would lead, as goes the argument, to misallocation of resources (Rodrik, 2004_[22]; Aghion, Boulanger and Cohen, 2011_[18]). Moreover, such “picking winners” most often distort competition;
- Industrial policy is prone to political capture and corruption – companies lobby to benefit from the industrial policy instruments (Rodrik, 2004_[22]; Aghion, Boulanger and Cohen, 2011_[18]);

social and economic goals”. They refer to Vogel (2018_[108]), who argued that since markets are constructs of public policy, no market is free and the state is regularly and necessarily engaged in creating and shaping markets.

¹² Liebowitz and Margolis (1995_[107]) define path dependence as “*a minor or fleeting advantage or a seemingly inconsequential lead for some technology, product, or standard [that] can have important and irreversible influences on the ultimate market allocation of resources, even in a world characterized by voluntary decisions and individually maximizing behavior*”. Acemoglu (2023_[124]) describes path dependence as “*past advances in the technology of a sector [that] will make further advances in the same sector easier*”. See for instance also work by (Aghion et al., 2016_[129]) and (Aghion, Antonin and Bunel, 2023_[97]).

¹³ In fact, Cherif and Hasanov (2019_[19]) identify three “gears” of industrial policy: snail crawl, leapfrog, and moonshot. While ambition and implementing policies differ, the authors argue that to create lasting productivity gains, solving market failures is key. A snail crawl approach would not implement radical changes and would involve more standard policies including providing incentives to private firms to locate somewhere. A leapfrog approach is more ambitious and tries to change comparative advantages in given sectors with measures that go beyond standard intervention measures. A moonshot approach would pursue ambitious goals and radical changes by creating industries and providing the necessary ingredients for domestic firms to thrive internationally.

- Industrial policy may crowd-out private innovation – large-scale public R&D policies may discourage private firms from innovating, as they perceive less need to invest in those areas (Juhász, Lane and Rodrik, 2023^[11]);
- There is little evidence that industrial policies are effective – existing empirical evidence on (many forms of) industrial policy is often mixed in terms of efficiency and effectiveness (Rodrik, 2004^[22]);
- Some countries lack the competent bureaucracies to render them effective – many countries may face challenges in implementing and managing industrial policy initiatives due to deficiencies in their governmental institutions (Rodrik, 2004^[22]). Similarly, some industrial policy instruments, such as subsidies, are more attainable for some countries than for others as a result of the required financial resources;
- Industrial policy often translates into protectionism, with negative consequences for total welfare – this argument suggests that government interventions are often aimed at protecting domestic industries from international competition, or even creating industries to compete internationally, for instance through tariffs, quotas, or subsidies, which restrict trade and leaves everyone worse off eventually. Such a strategy may lead to subsidy races and/or tit-for-tat responses, ultimately leading to industrial policy that is fiscally unsustainable;
- Industrial policy may lead to windfall effects when governments subsidise investments that would have happened even without government support, leading to wasteful government expenditures (Anderson et al., 2021, p. 12^[23]);
- It is more effective to use across-the-board support for R&D and intellectual protection – this argument claims that rather than targeting specific industries or sectors with government interventions, it is more beneficial to provide broad-based support for R&D activities and ensure strong intellectual property rights protection (Rodrik, 2004^[22]).

However, dismissing industrial policy entirely because of the aforementioned risks does not allow for a careful examination of where such policies might be beneficial, nor does it address valid concerns about the shortcomings of a purely hands-off market approach (Piechucka, Sauri-Romero and Smulders, 2023^[24]). These risks may rather function as a call for careful design and implementation of industrial policy.¹⁴

2.2. Contemporary industrial policy

Examples of recently announced, introduced, or already implemented industrial policies are abundant in recent years.¹⁵ Reasons for such abundance are different and often interconnected. Firstly, the aftermath of significant global events, such as the 2008 global financial crisis and, more recently, the COVID-19 pandemic, has underscored the fragility and vulnerabilities present in various industries. This has led governments to implement strategic interventions to stabilise, revitalise or stimulate key sectors of the economy and reinforce domestic production capabilities.

¹⁴ Or in the words of Ha-Joon Chang: “arguing against industrial policy on the basis of its potential risk would be like arguing for the ban of sharp knives on the grounds that some people get hurt using them, while some may even harm others with them. However, if we did that, we would lose the benefits of sharp knives altogether. What we need is a better safety education and a better control over their sales, not a ban on sharp knives” (Chang, 2006^[105]).

¹⁵ A few examples are the US CHIPS and Science Act (2022), the US Inflation Reduction Act (IRA) (2022), the New Industrial Strategy for Europe (2021), the European Chips Act (2022), the Korean New Deal (2020) or Japan’s Green Innovation Fund Project (2022). See also (Millot and Rawdanowicz, forthcoming^[101]) for an overview of recent industrial policy initiatives in selected OECD countries and China.

Secondly, the digital revolution and the advent of transformative technologies have been accompanied by a new era of industrial dynamics, prompting governments to actively develop policies to harness the opportunities presented by technological advancements while mitigating potential risks. In response, governments are increasingly integrating technology-focused initiatives into their economic and/or industrial policy, promoting digital innovation, upskilling, and reskilling programmes, and digital infrastructure investments to ensure that their industries remain competitive and inclusive in the digital age.

Thirdly, the necessity to address the urgent and complex challenge of climate change has led to a proactive approach from governments, leading to the adoption of industrial policies aimed at developing green technologies and fostering sustainable and environmentally friendly practices across industries.

Fourthly, the decline in productivity and output growth in recent decades, alongside the widening gap in wage distribution, have prompted governments to consider approaches that result in better, or more acceptable, social outcomes (Criscuolo et al., 2022^[2]).

Lastly, widespread declined confidence in market outcomes, geopolitical tensions including Russia's full-scale aggression against Ukraine and distrust in globalisation and free trade have led to increased protectionism and interventionism. This has led to calls for increased (supply chain) resilience, self-sufficiency, strategic autonomy and/or national security, prompting numerous governments to reassess their industrial strategies. Political trends play a significant role here and tit-for-tat strategies – industrial policy initiatives in several countries or regions as a direct response to large-scale intervention in other countries or regions, in some cases already in place for decades – risk a situation where everyone is worse off. Box 2.2 discusses some examples of recently implemented industrial strategies.

Box 2.2. Examples of contemporary industrial policy

Many countries developed or revised specific industrial policies in the direct aftermath of the COVID-19 pandemic. Such policies aimed to increase economic resilience, self-sufficiency, and even national security. For instance, Korea announced in 2020 its *Materials, Parts, Equipment 2.0 Strategy* to bolster domestic production of materials, parts and equipment and respond to the changing supply chains due to COVID-19, through reshoring subsidies, infrastructure investments and tax deductions for high-tech investments. Moreover, while the European Commission laid the foundations in 2020 for an industrial strategy that “would support the twin transition to a green and digital economy, make EU industry more competitive globally, and enhance Europe’s open strategic autonomy”, this strategy required an update in 2021 to reflect the new circumstances following the COVID-19 crisis.

Furthermore, several industrial strategies are aimed at boosting domestic semiconductor manufacturing, while equally/simultaneously addressing multiple other objectives. For instance, the *US CHIPS and Science Act (2022)*, the *European Chips Act (2023)* and the (Korean) *K-Chips Act (2023)* aim to promote digital innovation in the semiconductor sector to remain competitive, reduce external dependences of the sector, and (in the case of the European Union¹) achieve green transition. The three Chips Acts involve predominantly (but not only) investment incentives such as tax credits, loans, grants and subsidies. Additionally, they allocate funding to alleviate skills shortages by supporting education and training and enable skilling and reskilling.² Japan, with its *Strategy for Semiconductors and the Digital Industry (2021)*, and China, with its *National Integrated Circuit (IC) Promotion Guidelines (2014)* and *Made in China 2025 Plan (2015)*, have also set up their own framework to strengthen its competitiveness in the semiconductors sector. Although each country has its own specificities, funding is often aimed at supporting capital and commercial expansion, including expansion of equipment manufacturing and materials facilities, fabrication and R&D facilities, support for SMEs with innovation potential and partnerships with universities to prevent skills shortage.

Examples of strategies to address climate change, develop green technologies and foster sustainability include the *European Green Deal Industrial plan* (2023), the *Japanese Basic Plan for Green Transformation* (2022) and the *US Inflation Reduction Act* (IRA, 2022). However, while prioritising climate action, they also serve as investment and growth strategies, featuring funding for green transitions and regulatory standards. Instruments differ enormously between countries and include public subsidies, production and investment tax credits, grants, carbon pricing, creation of regulatory sandboxes and the introduction of regulation. In parallel, demand and governance instruments include the creation of a platform to facilitate co-ordination of private funding, international collaboration, changes in public procurement rules to include sustainability and resilience criteria and the acceleration of permits and related administrative procedures.

Some industrial strategies also explicitly further social objectives. For instance, Canada launched its version of a net-zero industrial policy, or its “*A Made-in-Canada*” plan, which seeks to bolster domestic manufacturing and reduce supply chain vulnerabilities, but also aims to create “good middle-class jobs”, and build a clean economy (Government of Canada, 2023). The IRA also targets especially disadvantaged communities.

Notes:

¹ In September 2023, the European Chips Act entered into force to “bolster Europe’s competitiveness and resilience in semiconductor technologies and applications, and help achieve both the digital and green transition”.

² In the case of the EU, competence centres in semiconductors, i.e. *Chips Competence Centres*, were created to provide companies access to experimentation in the sector and technical expertise by providing training and skills development.

Sources:

Canada: Government of Canada (2023), Budget 2023: A Made-In-Canada-Plan, <https://www.budget.canada.ca/2023/pdf/budget-2023-en.pdf>, China: Semiconductor Industry Association (SIA) (2021), “Taking stock of China’s semiconductor industry”, SIA Whitepaper, July 2021, https://www.semiconductors.org/wp-content/uploads/2021/07/Taking-Stock-of-China%E2%80%99s-Semiconductor-Industry_final.pdf, Europe: https://commission.europa.eu/strategy-and-policy/priorities-2019-2024/europe-fit-digital-age/european-industrial-strategy_en; https://commission.europa.eu/strategy-and-policy/priorities-2019-2024/europe-fit-digital-age/european-chips-act_en; https://www.entreprises.gouv.fr/files/files/01-nouveau-portal/Evenements/20231107_ecguidelines_competence_centres-v3.pdf, Japan: <https://japan.influencemap.org/policy/GX-Green-Transformation-5477>, Korea: Szczepański, M. (2021), “Resilience of global supply chains; Challenges and solutions”, European Parliamentary Research Service briefing, November 2021; <https://www.businesskorea.co.kr/news/articleView.html?idxno=48866>, US: <https://www.whitehouse.gov/briefing-room/statements-releases/2022/08/09/fact-sheet-chips-and-science-act-will-lower-costs-create-jobs-strengthen-supply-chains-and-counter-china/>; <https://www.semiconductors.org/chips-incentives-awards/>

2.2.1. Empirical evidence is increasing

Despite the large number of industrial policies, or perhaps exactly because of them, assessing the scope and scale of industrial policy, let alone the success or failure, has proven to be notoriously difficult.¹⁶ Indeed, the lack of empirical research of industrial policy has caused an incomplete understanding of what works and what doesn’t work (Lane and Juhász, 2023^[3]; Juhász, Lane and Rodrik, 2023^[1]). Nonetheless, in recent years, there has been substantial progress in this regard and a significant number of studies have

¹⁶ Firstly, the absence of a broadly agreed definition of industrial policy makes comparison – for instance across countries and over time – difficult. Secondly, even if a definition is (or would be) generally agreed upon, government intervention is often not (fully) transparent and/or easily measurable. Thirdly, industrial policy is most often complex, multi-dimensional and has long-term effects on economic outcomes. It often serves multiple objectives, involves a wide range of interventions, affects or targets multiple sectors and industries and is evaluated against different criteria. This makes it challenging to define appropriate counterfactuals, a world without the industrial policy measure, and isolate the impact of individual policy measures. The result is a significant lack of data and empirical studies on industrial policy (Criscuolo et al., 2022^[2]; Juhász et al., 2022^[93]).

tried to focus more on quantifying industrial policies and its (potential) effects.¹⁷ These studies show a clear increase in the use of industrial policy. Moreover, the magnitude of industrial policy is significant: estimates in nine OECD-members¹⁸ for the period 2019–21 find that they spent on average 1.4% of GDP on industrial policies through grants and tax expenditures and provided an additional 1.8% of GDP through financial instruments (loans, loan guarantees, equity investments – including 1.1% of GDP on export finance schemes) (Criscuolo et al., 2023^[25]). Considerable differences exist across countries, with grants and tax expenditures ranging from 0.6% of GDP in Ireland to 2.3% in the United Kingdom. There is also a considerable degree of heterogeneity in terms of strategic priorities. Industrial strategies in the selected countries mainly rely on sectoral instruments, representing on average 29% of grants and tax expenditures, while green instruments are important and rose significantly in six out of nine countries between 2019 and 2021. Finally, subsidies are “sticky” (once a firm receives an industrial subsidy, this will often be the case for the next years to come), most industrial subsidies are given to just a few companies, and state-owned enterprises receive relatively more subsidies (OECD, 2023^[10]).

Empirical evidence on the effects of industrial policy has surged along with its increasing use and debate about the policy’s merits. Recent empirical work has highlighted several ways in which industrial policy can yield positive outcomes. For example, studies have shown that infant industry protection, such as temporary tariffs or subsidies, can nurture nascent industries and shield them from international competition, fostering their growth and competitiveness over time (Juhász, 2018^[26]). Additionally, strategic investments in R&D and innovation have been instrumental in driving technological advancements and industrial upgrading. Governments that have prioritised R&D funding and innovation support programmes have witnessed improvements in productivity, competitiveness, and the emergence of new industries (Kantor and Whalley, 2023^[27]). Relatedly, well-designed R&D tax credits and subsidies are effective in stimulating R&D and innovation, while skill and knowledge transfer policies are key complementary instruments (Criscuolo et al., 2022^[16]). Furthermore, place-based industrial policies, which focus on fostering regional development and reducing spatial disparities, have demonstrated positive impacts on employment, investment, and economic growth in underdeveloped areas (Criscuolo et al., 2019^[28]; Cingano et al., 2022^[29]). Other examples of industrial policy episodes that were considered successful include the support provided to heavy and chemical industries in South Korea in the 1970s (Lane, 2022^[30]), or post-war Finland strategy to move away from agrarian economy (Mitrunen, 2019^[31]).

However, several studies point at less successful or even failing industrial policy in the past. For instance, Hufbauer and Jung (2021^[32]) show industrial policy episodes that are partly or entirely successful while

¹⁷ For instance, the OECD, through its OECD Quantifying Industrial Strategies ([QuIS](#)) project, gathers publicly available data and attempts to measure industrial strategies across OECD countries (see also (Criscuolo et al., 2023^[25])). Furthermore, the OECD developed its MAnufacturing Groups and Industrial Corporations (MAGIC) database, which is a firm-level database of government support in key industrial sectors covering 15 sectors and more than 450 companies from all over the world over the period 2005-22. Other OECD work quantifies types of industrial policies, such as subsidies in the steel sector (OECD, 2022^[130]) or below-market financing (OECD, 2021^[98]). Furthermore, Juhász, Lane, Oehlsen and Pérez (2022^[93]) have developed a novel approach to quantify and analyse practices on industrial policy practices by using machine learning techniques that automatically classify industrial policies based on policy descriptions. Moreover, Evenett et al. (2024^[87]) introduce a new monitoring tool (the New Industrial Policy Observatory, or NIPO) that aims to capture industrial policy developments. Finally, several other initiatives and reports on industrial policy have recently been published, including (DiPippo et al., 2022^[94]) which compares China with seven other economies (Brazil, Chinese Taipei, France, Germany, Japan, South Korea, and the US) and (SCCEI and CCA, 2023^[92]) which focuses on China.

¹⁸ The countries that volunteered to participate in this first phase of the project are Canada, Denmark, France, Ireland, Israel, Italy, the Netherlands, Sweden and the United Kingdom.

others are complete failures.¹⁹ The failures of import substitution policies in Latin American in the post-WWII era in an attempt to stimulate economic growth are an often-used case in point as well (Birdsall et al., 1993, p. 87^[33]).

Overall, recent empirical research seems to offer a more positive take on industrial policy (Juhász, Lane and Rodrik, 2023^[11]), even if such policies are often very context-specific and drawing general conclusions may prove difficult.

2.2.2. Industrial policy to fulfil a crucial co-ordination role

Further to the increasing use of industrial policy and the (cautiously) more favourable view on such policies in recent empirical studies, contemporary industrial policy differs in many ways from such policies in the previous century. One important change is the increased emphasis on co-ordination between multiple stakeholders, including government agencies, the private sector, academia, and civil society. Many of the acute and complex challenges discussed in the previous section necessitate addressing significant interdependencies between stakeholders. For instance, firms may be very reticent to invest in a new technology or product because the benefits of such investment are highly dependent on the likelihood or willingness of others to invest in complementary or related technologies. Or, as Larrue (2021^[34]) puts it with regards to mission-oriented innovation policies, *“the more wicked the challenge, the higher the demand for co-ordination”*. An example with regards to such co-ordination is that of electric cars, mentioned in section 2.1.2, but another example is the critical role that coordination played in ‘Operation Warp Speed’ (OWS) in the United States that was set-up to develop a COVID-19 vaccine in record time. Apart from creating a competitive process for the development of the vaccine, the US government played a key co-ordination role by facilitating manufacturing at an industrial scale and planning distribution, even before the vaccines were proven to be efficacious and safe (see Box 2.3).

Juhász, Lane and Rodrik (2023^[11]) also point at the need for continuous iterative collaboration with the private sector, something quite different from the more traditional approach characterised by hands-off, arms'-length and strict ex-ante-rules. Rodrik (2008^[35]) calls for “embedded” industrial policy, or *“a model of strategic collaboration and coordination between the private sector and the government with the aim of uncovering where the most significant bottlenecks are, designing the most effective interventions, periodically evaluating the outcomes, and learning from the mistakes being made in the process.”* Finally, according to Lipsey and Carlaw (2020^[36]), who discuss the prevalence and significance of industrial policies across various economies, a key characteristic of most of the successful ones is that public and private sector agents engage in co-operative ventures with each concentrating on the areas of their comparative advantage.

This co-ordination role has helped convince many economists of the need for industrial policy to solve complex, urgent and multifaceted challenges. The implication is that governments must adopt or improve a range of capabilities to play this role effectively—from program design and delivery to monitoring and re-design (Akileswaran and Sandhu, 2024^[37]).

¹⁹ They provide scoring for 18 industrial policies in the US between 1970-2020 based on three criteria (the effect on US competitiveness in global markets, whether the annual cost per job saved or created in the sector was reasonable, and whether support advanced the technological frontier).

Box 2.3. Operation Warp Speed

Operation Warp Speed (OWS) was a US response to the COVID-19 pandemic aimed at accelerating the development and manufacturing of COVID-19 vaccines. It was a public-private partnership that coordinated efforts from the Departments of Health and Human Services (HHS) and Defense (DoD), along with other agencies and private entities.

OWS aimed to select the most promising vaccine candidates and provide government support to expedite their development. This involved simultaneously advancing various stages of vaccine development, such as facilitating manufacturing at an industrial scale and planning distribution before the vaccines were proven to be efficacious and safe as well as establishing advance purchase agreements. The initiative focused on three core areas:

1. **Development:** OWS supported eight vaccine candidates from over 100 candidates initially identified. Companies were asked to donate countermeasures, including vaccines, as part of the collaboration. The goal was to create a diversified portfolio of vaccines using different technologies and facilitate FDA review of Phase I-III clinical trials.
2. **Manufacturing:** The government facilitated manufacturing for candidates demonstrating vaccine efficacy and safety, irrespective of the firms' production capacity.
3. **Distribution:** Infrastructure for vaccine distribution, including storage and transportation supplies, was established before the vaccines received approval.

Officially announced in May 2020, OWS had provided 63 million doses by January 2021, transitioning to the Biden administration in February of that year.

OWS facilitated competition among vaccine developers by providing funding and support to multiple promising candidates instead of picking one winner, encouraging innovation and efficiency in vaccine development. Moreover, it exemplified effective domestic coordination, fostering collaboration among competing entities in the US vaccine manufacturing supply chain. OWS represented a mission-oriented policy that swiftly addressed a technological challenge, accelerating vaccine development and rollout by approximately five months, as estimated by the NIH.

Sources:

<https://web.archive.org/web/20201216233803/https://www.hhs.gov/about/news/2020/05/15/trump-administration-announces-framework-and-leadership-for-operation-warp-speed.html>; <https://fas.org/publication/how-to-operation-warp-speed/>; Dewatripont, M. (2023), "A new pharma industrial policy for Europe? Lessons from COVID-19", In: Sparking Europe's new industrial revolution; A policy for net zero, growth and resilience, Blueprint series 33

2.3. Objectives of competition policy

Before discussing the interplay between industrial policy and competition policy, it is useful to recap the definition and objectives of competition policy.

Competition policy can be defined as *"The set of policies and laws which ensure that competition in the marketplace is not restricted in such a way as to reduce economic welfare"* (Motta, 2004, p. 30_[38]). The premise is that competitive markets tend to produce greater amounts of economic welfare than less competitive markets, and there is significant empirical evidence for this (OECD, 2014_[39]). Such competitive markets achieve efficient market outcomes in terms of price, quality, or innovation, either static (at a specific moment) or dynamic (over time). The connection between efficiency and competition is anchored in the first welfare theorem, stating that under perfect competition, individual optimisation results in efficient resource allocation without state

intervention (Adam Smith's metaphorical 'invisible hand' of the market). The perfect competition model, despite its unrealistic assumptions, still has a central position in economic theory. Departures from this model are presumed to lead to allocative inefficiencies, prompting corrective economic policies.

The objectives of competition policy may change over time and differ per jurisdiction. Many, or most, jurisdictions, have a focus on promoting the competitive process and maximising efficiency within their objectives, based upon welfare economics. However, some consider competition policy as a tool to achieve other objectives, including pluralism, employment, mitigating economic power, supporting SMEs, fairness and equity and other socio-political values.²⁰

When comparing the above objectives with those of industrial policy in section 2.1, one can observe that the dominant rationale for industrial policy – addressing market failures – often aligns or overlaps with the objectives of competition policy. However, despite this alignment in addressing market failures, the precise objectives, and subsequent implementation, may not always (fully) coincide. Objectives of industrial policy can often be multiple and much wider (as we saw in the previous section), and this can create tension between the two. For instance, certain industrial policies, such as protectionist measures or financial support to domestic industries, may distort competition and hurt market efficiency, conflicting with the objectives of competition policy. Conversely, competition policy measures aimed at promoting market competition may sometimes challenge the objectives of industrial policy, particularly when they disrupt government efforts to support specific industries deemed strategically important.

²⁰ See for instance the OECD session "[The Goals of Competition Policy](#)" during the OECD Global Forum on Competition on 7 December 2022.

3 Interplay between industrial policy and competition policy

In the previous section, we have seen that a multitude of economic objectives exists for industrial policy. However, implementing policies to promote industrial development, or, using the definition from the previous section, to improve structurally the performance of the domestic business sector, may have consequences for the level and/or nature of competition. Such consequences may be positive or negative, direct or indirect, intended or unintended. For instance, industrial policy may create initiatives for companies to invest in R&D, stimulate innovation or increase new entry. However, it can also lead, for instance, to preferential treatment for certain industries or firms, create barriers to entry and as a result hinder competition. While industrial policy can affect competition in many ways, competition policy, through its enforcement and advocacy activities, can certainly also influence shaping industrial policy.

Industrial policy and competition policy have a complex relationship. To a certain extent, this complexity can be deduced from the many ways in which this interplay is described in the literature. Some have long argued that they have contradicting aims because of the alleged inefficiencies and protectionism that would come with industrial policy, while others deemed them to have overlapping or similar objectives as they “are complementary and need to go hand in hand” (Criscuolo et al., 2022, pp. 14,32^[2]), “are complementary rather than substitutes” (Aghion, Boulanger and Cohen, 2011^[18]), or “inform each other” (Concurrences, 2020^[40]). Competition policy is also defined as a specific industrial policy instrument (Criscuolo et al., 2022^[2]) as well as considered a necessary ingredient for industrial policy to succeed (Concurrences, 2023^[41]).

The way in which industrial policy and competition policy interact depends on several factors, including their underlying policy objectives and the exact design and implementation of both policies. They may “meet” each other in essentially two ways:

- Industrial policy can affect (positively or negatively) competition (policy)
- Competition policy (or enforcement) can affect industrial policy

These two “meeting points” can have a domestic and international dimension. For instance, industrial policy in a given country can have an effect on competition in its domestic market (and vice versa). However, if markets are transnational, industrial policy may have significant potential spillovers to other countries, with effects on competition and trade. Similarly, the use of, or room for, industrial policy depends significantly on the way in which competition policy is applied in different jurisdictions. More stringent or lax (or absent) application of competition policy with regards to government intervention can create an unlevel playing field in international or global markets, with potentially significant consequences for industries to be able to compete (Deffains, d’Ormesson and Perroud, 2020^[4]).

This section discusses the interplay between competition policy and industrial policy using these two “meeting points”. On the one hand, industrial policy itself can, and should, create or improve competition, notably by focusing on addressing market failures. On the other hand, competition enforcement can actively strengthen industrial policy by ensuring markets are competitive.

3.1. Industrial policy affecting competition

The first “meeting point” between both policies is that industrial policy itself can harm or support competition. This is the part that has traditionally created scepticism towards industrial policy as the government unduly favouring certain companies over others, “picking winners” or preserving local employment, was viewed as inefficient and wasteful. However, more economists, helped by some of the empirical work mentioned in the previous section, realise that well-designed industrial policy is possible – or perhaps required – to achieve certain economic and social objectives. As such, instead of viewing markets and state intervention in isolation (or as alternatives), they should be seen as interconnected elements within a broader economic system (Coyle, 2020^[42]). By nurturing competitive industries and creating a conducive environment for new entrants, industrial policy can stimulate innovation and entrepreneurship, ultimately leading to increased competition. In other words, in a second-best world (or “real” world, namely one in which most markets are imperfect), targeted policies may be justified and introducing a policy distortion may actually be welfare enhancing (Criscuolo et al., 2022, p. 11^[2]).

Then the question remains what such “well-designed” industrial policy should entail. This is where competition policy comes in, as economists increasingly view competition as being the basis that should be effectively protected and promoted (Petropoulos, 2019^[43]).²¹ The argument is that competition, as a process, should be one of the cornerstones of carefully designed industrial policy (OECD, 2020^[44]). Indeed, many other scholars have emphasised the central role that competition should play when designing industrial policy. For instance, Aghion et al. (2015^[45]) indicate that industrial policies allocated to competitive sectors, or that foster competition in a sector, increase productivity growth. Tirol (2022^[46]) provides eight recommendations for industrial policy, one of which is to adopt a competitively neutral policy. Finally, Aghion (2023^[47]) mentions that “A priority is for industrial policy to be competition-friendly”. In the US, competition has become a central theme in Bidenomics,²² linked to a crucial role that the administration has given to its different industrial strategies. The US administration considers that by promoting competition when deciding in what industries to invest, the US government shapes pro-competitive industries and avoids having to deal with anti-competitive effects (such as markets that are too concentrated) later (Boushey, 2023^[48]).

3.1.1. Industrial policy can create or increase competition

In the absence of (an optimal level of) competition, industrial policy instruments can play a pivotal role in creating or fostering competition. By relying on competition principles from the beginning when governments intervene in certain markets, industries can be shaped or reformed to be pro-competitive so that competition problems, including anti-competitive conduct or high levels of concentration, are less likely to occur.

²¹ The idea is that the benefits of competition are broadly accepted and empirically demonstrated. A wide variety of empirical studies, on an industry-by-industry or even firm-by-firm basis, have confirmed that industries where there is greater competition experience faster productivity growth (OECD, 2014, p. 4^[39]).

²² “Promoting fair competition is a key pillar of Bidenomics, along with investing in America and empowering workers. Competition is the backbone of a market economy; it supports lower prices, higher quality goods and services, greater variety, and more innovation. Accordingly, President Biden has pushed for a whole-of-government approach to identify and address barriers to healthy competition wherever they appear, starting with an Executive Order in the early months of the Administration, which created the White House Competition Council and identified 72 actions agencies could take to increase competition.” (Boushey, 2023^[48]).

Promoting competition by reducing barriers to entry

The lack of competition is often related to the presence of barriers to entry, i.e. obstacles that prevent new firms from entering and competing in a particular market. They can be structural, such as economies of scale, capital requirements and government regulations, or strategic, such as exclusionary practices or high switching costs. A barrier to entry does not have to prevent firms from entering a market indefinitely to affect competition; delaying the entry of new firms may already be sufficient (OECD, 2005_[49]).

An extreme case of the fostering competition in the case of significant barriers to entry is the actual creation of a competitor. An often-used example is the creation of Airbus in Europe which aimed to foster competition in the aerospace industry.²³ Established in 1970 as a consortium of European aerospace companies, Airbus was created with the explicit goal of challenging the dominance of American aerospace giant Boeing. It is often considered a success,²⁴ at least for Europe, as it created a direct competitor to a market dominated by Boeing and avoided a secondary role for European aviation companies as sub-contractors to American producers. However, empirical evidence of the practice to create competition through industrial policy is mixed. Firstly, there are less successful episodes than for instance Airbus (or just flat out unsuccessful – see the cases of Solyndra and Concorde in section 2), and secondly, such creation of competition, however positive for the benefitting country or region (Europe in the Airbus case), may actually reduce global welfare due to a (larger) decrease in welfare of the (incumbent) firm(s) in the competing country or region (Neven and Seabright, 1995_[50]).²⁵

Instead of downright creating a competitor (as in the case of Airbus), industrial policy can foster competition by reducing barriers to entry for all market players. For instance, Barwick, Kalouptside and Zahur (2021_[51]) show that investment subsidies can have dynamic consequences as new firms continue to operate after the end of the intervention. A recent example of this is the attempt by the US government to actively increase competition in the meat packing sector by stimulating entry and expansion of smaller players (see Box 3.1). Interestingly, the case also showed that the industrial policy intervention may benefit from being accompanied by active competition enforcement.

²³ See for instance (Terzi, Singh and Sherwood, 2022, p. 33_[91]) (Lipsey and Carlaw, 2020, pp. 42-43_[36])

²⁴ See for instance (Mazzucato, 2021_[7]), (Aghion, 2023_[47]) and (Tyson and Zysman, 2023_[119]).

²⁵ For instance, the Airbus presence, with an estimated profit of between USD 40-52 billion, reduced Boeing's profits by at least USD 100 billion. As a result, Airbus had a large negative impact on world social welfare, but a comfortably positive impact on European welfare. (Neven and Seabright, 1995, pp. 319-320_[50])

Box 3.1. The US meat-packing rescue package to foster competition

In January 2022, the US Government announced the decision to spend USD 1 billion in post-pandemic economic recovery funds to boost competition in the US meatpacking sector – an industry in which four firms control 85% of all beef processing and 70% of the pork market. The decision was aimed at bringing new players into the meat-processing chain or strengthening competition between the existing ones, to stimulate more choice, lower prices for consumers and enhance the resiliency of the food supply chain.

With this package, the US Department of Agriculture (“USDA”) Rural Development made USD 150 million available in grants to fund start-up activities in the meat and poultry processing sector and another USD 150 million in grants to enable current players to scale up. By being more targeted at newer players, these measures are intended to create market alternatives and therefore increase choice and increase competition.

To accompany such measures, a number of other competition-driven initiatives were also announced, including a joint initiative between the Department of Justice and USDA to identify potential violations of competition laws, and a preparation of a report on the conditions of access to retail as well as competition’s role in protecting new market entrants in meat processing. One of the reasons provided by the Administration for this approach, was that disruptions in meat processing during the pandemic was due to the high level of concentration. During the pandemic, one of the four firms had closed two large processing plants due to the coronavirus, leading to significant reductions in pork and beef productions and requiring an Order for abattoirs to remain open under the Defense Production Act.

So far (in March 2024), the grants and loans seem to have significantly boosted small meatpacking producers’ capacity and its resiliency across the country. However, difficulties remain, and it is still too early to tell that it has achieved its desired effect. Small processors keep facing higher operation expenses, challenges to compete with the main meatpacking firms, and its expansion is still marginal in comparison to the substantial production volumes achieved by industry leaders.

Sources: OECD (2023), Pro-competitive Policies for a Sustainable Economy: Discussion Paper, <http://www.oecd.org/daf/competition/pro-competitive-policies-for-a-sustainable-economy-discussion-paper.pdf>; <https://missouriindependent.com/2023/11/30/small-meat-processors-say-usda-measures-dont-address-consolidated-industrys-root-problems/>

However, the government, through industrial policy, can also make entry or expansion more difficult or costly. For instance, subsidising incumbent firms (through R&D subsidies) may discourage the entry of new, higher-performing firms as a result of a reallocation effect: incumbent firms increase the demand for skilled labour and other factors of production, thereby increasing their cost (Acemoglu et al., 2018^[52]). This extra cost in turn reduces the profits that potential new entrants can expect, discouraging them from entering the market (Aghion, 2023, p. 32^[47]).

Government regulation itself can also be an entry barrier. Especially in fast changing markets, poorly designed industrial policy can have a significant impact on possibility to enter, as well as on the ease of reallocations of capital and labour resources across firms and business sectors. Moreover, very practically, rules and requirements for access to subsidies, as well as insufficient or flawed bureaucratic capacity to process requests for such subsidies can become a barrier to entry, in turn jeopardising the success of the

industrial policy. Again, industrial policies, when poorly designed and implemented, can create a *de facto* entry barrier.²⁶

To avoid this, an assessment of the laws and regulations that are meant to shift an industry (i.e. industrial policy) can help evaluate the impact of such regulation on competition. In October 2023, the US Office of Management and Budget (OMB) released guidelines to help government agencies that develop federal regulations to better assess their potential effects on competition, building on the OECD Competition Assessment Toolkit.²⁷ When evaluating the impact of a regulation, American agencies are expected to answer questions such as how a regulation would potentially change the number or range of competitors or a firms' incentive or ability to compete as well as how the regulation could affect – or be affected by – the supply chain and labour market competition.²⁸

Public procurement to create competition

Public procurement can also play a key role in creating or increasing competition. While the primary procurement objective of public procurement is to “deliver goods and services required to accomplish the government mission in a timely, economical and efficient manner”, there is a growing interest in deploying public procurement for “secondary policy objectives”, including industrial policy objectives.²⁹

By using competitive tenders, government funding can not only be allocated much more efficiently and effectively, it can actually create or strongly facilitate the entry of new competitors. Criscuolo et al. (2022, p. 4_[16]) argue that public procurement may indeed foster innovation in cases where demand emanates from the public sector (e.g. aerospace, defence, infrastructure). Most competition authorities have enormous experience with designing competitive tenders, for instance promoting objective and transparent criteria, often a result of their efforts in fighting bid rigging (see Box 3.2 for two examples).

²⁶ For instance, the US witnessed a delay in the disbursement of government subsidies as part of the CHIPS Act to certain large foreign companies, raising concerns about possible prioritisation of domestic companies in subsidy allocation and timing. [Is U.S. industrial policy learning from its mistakes? \(noahpinion\)](#).

²⁷ The [OECD Competition Assessment Toolkit](#) helps governments to eliminate barriers to competition by providing a method for identifying unnecessary restraints on market activities and developing alternative, less restrictive measures that still achieve government policy objectives.

²⁸ [Guidance on Accounting for Competition Effects When Developing and Analyzing Regulatory Actions \(whitehouse.gov\)](#)

²⁹ OECD Recommendation on Public Procurement [[OECD/LEGAL/0411](#)].

Box 3.2. Facilitating entry of new competitors through public procurement

Colombia's 4G spectrum allocation

An example of how a competition authority has facilitated entry in a market is the design by the Colombian competition authority, the Superintendence of Industry and Commerce (SIC), of a competitive auction in the market for mobile communications services in 2011.

The Colombian government had prioritised mobile Internet as an emerging, important market for growth. However, an economic analysis by the SIC had identified a risk of perpetuating the market dominance of a single provider (Claro) in the market for mobile Internet and voice services. Consequently, in response to a proposed public auction of fourth-generation long-term evolution (4G LTE) spectrum, SIC worked with other government agencies to restructure the auction to increase competition in the market.

They discovered that an open, unrestricted spectrum auction would likely maintain the existing monopoly due to high entry costs. To counter this, the competition authority suggested creating "reserved blocks", and limited the dominant provider to competing in just one of those blocks with other established telecommunications firms. A separate reserved block in the advanced wireless service spectrum would be open to potential new market entrants. The reserved blocks allowed two new entrants – Avantel and DirecTV – to enter the market, fostering competition. The collaboration among Colombian agencies was crucial to increase industry competition while maintaining the market's overall health, ultimately leading to improved telecommunications infrastructure and business attractiveness for the country.

Formation of the United Launch Alliance (ULA)

A second example is how governments may need to take risks in allowing new, innovative, companies to compete for public contracts.

In May 2007, the US Federal Trade Commission (FTC) cleared the transaction that created a joint venture between the only two US suppliers of launch vehicles for national security launches, Lockheed-Martin and Boeing, creating the United Launch Alliance ("ULA"). This was a merger to monopoly that raised concerns resulting from the fact that the US government, as purchaser, would become fully dependent on one single supplier of heavy launch vehicles. The case raised concerns not only from the FTC, but also from the US Department of Defence ("DOD"), as it involved antitrust issues in the aerospace and defence sector.

In its merger assessment, the FTC primarily focused on evaluating the possibility of future competition entering the market and the parties' efficiency argument on scale economies. The transaction was cleared with commitments to resolve vertical foreclosure concerns that would limit ULA's ability to discriminate future entrants. More importantly, soft commitments from government purchasers included that they would make an effort to consider and support new entrants. This implied that both the DOD and NASA would facilitate new market entries to compete with the single supplier result of the transaction. As a result, a few years after the merger, NASA provided SpaceX with government contracts as an alternative to ULA. By 2020, the new suppliers of launch services (SpaceX and others) have made outstanding progress toward becoming alternatives for NASA, national security agencies, and commercial buyers.

The ULA case leaves three lessons. First, public procurement can diversify highly concentrated markets and catalyse unanticipated improvements in products and services, fostering competition. Public procurement officials need to be willing to take more innovative and risky approaches, considering very innovative companies that were not active in the field before. Second, competition authorities' co-operation with other national agencies can resolve issues in competition, innovation, entry and

efficiency in a complex and dynamic sector, allowing the creation of procurement options. Third, competition agencies can apply novel analytical tools to deal with innovation issues in highly technologic markets. It implies taking risks and encourage entry through time in innovative markets.

Sources: World Bank Group (2014), The Competition Policy Advocacy Awards. Changing Mindsets to Transform Markets: Lessons Learned from the First Annual Awards in Competition Policy Advocacy, <https://documents1.worldbank.org/curated/zh/609211474266532681/pdf/108251-WP-Competition-Policy-Awards-PUBLIC.pdf>; Kovacic, W. (2020), "Competition Policy Retrospective: The Formation of the United Launch Alliance and the Ascent of SpaceX", 27 Geo. Mason L. Rev. 863 (2020), GWU Legal Studies Research Paper No. 2020-47, GWU Law School Public Law Research Paper No. 2020-47, <https://ssrn.com/abstract=3670742>

3.1.2. Industrial policy supportive of competition

Inevitably, most industrial policy instruments or strategies will not have the explicit (or even implicit) objective of creating or increasing competition. However, incorporating competition considerations into industrial policy may be beneficial for its long-term success, especially in contexts where the goals include broadening economic participation and transforming economic structures alongside achieving economic growth. As such, industrial policies may (or should) be designed in a way that they are supportive or respectful of competition. The way to do this is not straightforward, as the effect of industrial policy programmes or strategies depend on their objectives and scope as well as their design and implementation.

According to (Aghion et al., 2015^[45]), making industrial policy pro-competitive requires policies to not focus on one or a few select firms, but dispersed across a sector: "[c]ompetition-friendly policies are defined as targeting that is more dispersed across firms in a sector or measures that encourage younger and more productive enterprises". Moreover, they argue that beneficial effects of targeting depend on both the degree of competition in the targeted sector and on how the targeting is done. In terms of how the targeting should be done, different views exist, but also commonalities (Caffarra and Lane, 2024^[53]). Many emphasise the importance of "process over outcomes" (Reynolds, 2024, p. 4^[54]): the process needs to be well-designed, and strategic collaboration between the public and private sectors (as discussed in section 2.2.2) can facilitate problem solving over time. Importantly, a solid, institutionalised process can also help stop the implementation of policies when there is a need to change or reverse course. As part of this industrial policy process, an important role to make industrial policy pro-competitive can be played by "conditionalities" (Mazzucato and Rodrik, 2023^[55]) and "guardrails". Moreover, governance can also play a significant role in the design of pro-competitive industrial policy. Both are discussed below.

Conditionalities and guardrails

Conditionalities place obligations on recipients of government support to ensure that such firms reciprocate through appropriate investment behaviour and performance. Such conditionalities can be of a limited kind, for instance ex-ante eligibility criteria, or may be conditioned on ex-post behavioural changes (Juhász, Lane and Rodrik, 2023^[11]). An example of the former (limited kind) can be that only a certain size firm in a particular sector or region is eligible for a subsidy. The latter case could be a situation in which undertaking specific investments is expected. Such conditionalities are not a new phenomenon. Amsden (2001^[56]) described the crucial role that conditionalities have played in the success of the East Asian Tigers (as mentioned also box 2.1) as this linked government support and intervention to the establishment of disciplining mechanisms to ensure that economic outcomes were in line with carefully considered performance targets.³⁰ However, the extent to which conditionality has been an (explicit) part of a coherent, well-designed industrial strategy has varied (Mazzucato and Rodrik, 2023^[55]). They are especially deemed

³⁰ Amsden (2001^[56]) called such conditionalities reciprocal control mechanisms (RCMs).

relevant in the context of a government that creates or shapes markets, i.e. through high-risk investments, and it should find a way to socialising both the risks and the rewards (instead of just the risks).

Conditionalities can be pro-competitive but can also distort markets. An example of how they have proven to facilitate domestic competition is by using export targets as a condition for government support in East Asian economies. The more a company exported, the higher the chance it was to receive more attractive, long-term loans as well as tariff protection for its sales in the local market. These conditionalities led to aggressive competition among Korea's big business groups at a time when the appearance of heavy industries was dampening competition at the sectoral level. A subsidised firm that failed to perform was ceased being subsidised (Kim, 1997^[57]). They can also be market distorting, for instance by requiring local content requirements. Such LCRs may help achieve certain (short-term) objectives but are generally considered as undermining long-term competitiveness. This is related to the fact that LCRs cause a decline in global imports and exports across not just trading partners, but for the imposing economy as well as it increases domestic production costs (Stone, Messent and Flaig, 2015^[58]).

Guardrails are rules that condition public support on limits to extractive corporate behaviour in order to prevent industrial policy investments from dissipating through firms (continuing to) prioritise shareholder value maximisation at the expense of true innovation (Palladino and Estevez, 2022^[59]).

Reynolds (2024^[54]) analyses the conditionalities and guardrails of three recent pieces of US industrial policy: the Infrastructure Investments and Jobs Act (IIJA) passed in November 2021 and the CHIPS and Science Act and the Inflation Reduction Act (IRA), both passed in August of 2022. Each of the three laws includes both guardrails and some level of conditionalities (see Box 3.3), even if the nature of the CHIPS Act makes it the most vulnerable of the three to concerns regarding corporate welfare or "picking winners". The CHIPS Act is largely distributed through discretionary programs as it specifically targets expansion of semiconductor manufacturing, in which there are a relatively few, large companies. The IIJA, however, is predominantly distributed through formula funding, and the IRA provisions (related to renewable energy)³¹ provide predominantly tax credits and grant and loan programmes.

Box 3.3. Conditionalities and guardrails in the United States

The CHIPS and Science Act

Guardrails: The CHIPS Act adopts a portfolio approach to federal grants, inviting all semiconductor companies to apply, regardless of their location, thereby avoiding the selection of a single "national champion". The Act promotes competition through its discretionary programs, which aim to build globally competitive semiconductor clusters by supporting the entire supply chain, not just the leading Original Equipment Manufacturers (OEMs). An important element of the CHIPS policies is the role of states, as the CHIPS Act requires state contributions for funding applications, emphasising state-level commitment and partnerships. If grant recipients fail to meet their conditions, they must return the full amount awarded.

Conditionalities: The CHIPS Act mandates various conditionalities for companies receiving federal funds, reflecting the administration's societal values and broader legislative goals. These conditions include providing day care for construction workers, using union labour, and paying prevailing wages, employing US-made materials, creating workforce development plans, limiting stock buybacks and

³¹ The IRA includes measures to invest in domestic energy production and manufacturing and reduce carbon emissions by 2030, but it also includes measures to lower healthcare costs and fight inflation. It allows Medicare to negotiate for prescription drug prices and extend the expanded Affordable Care Act program for three years ([Inflation Reduction Act One Page Summary](#)).

dividends, profit-sharing with the government in case of windfall profits, and restricting expansion in China for a decade. 5

The Inflation Reduction Act (IRA)

Guardrails: The IRA's primary tax credits, including the Clean Energy Production Tax Credit (PTC) and the Clean Electricity Investment Tax Credit (ITC), are technology-neutral and flexible, focusing on clean energy technologies that produce zero greenhouse gas emissions. This contrasts with previous credits and provides the private sector flexibility in directing investments. Besides the PTC and ITC, the IRA contains 18 other tax credits and funding programs that target specific technologies like hydrogen, nuclear, solar, wind, and clean fuels.

The PTC and ITC offer a base tax credit if prevailing wage and apprenticeship requirements are met. They also allow for "direct pay" and transferability, letting non-taxable entities, like government and tribal communities, access the credits, while taxpayers can transfer credits for cash. This supports the administration's equity goals by extending benefits beyond for-profit companies.

Conditionalities: The IRA contains several conditionalities on tax credits and discretionary programs, focusing on equity and promoting domestic production. The key mechanisms are:

- **Bonus Tax Credits (beyond the base credits):** These offer additional incentives for companies that use domestic content, such as US-produced iron and steel, or invest in brownfields, retired coal communities, or low-income areas with renewable energy projects.
- **Community Benefits Plans (CBPs):** Recipients of Department of Energy IRA competitive grants must submit a CBP detailing the project's impact on marginalized communities and measures to address adverse effects. CBPs are part of the administration's Justice 40 initiative, aiming to direct at least 40% of benefits to disadvantaged communities.
- **Electric Vehicle (EV) Tax Credit for Consumers:** This offers a credit for purchasing an EV if final assembly and a portion of battery components are US-sourced. The provision also allows sourcing from US Free Trade Agreement partners, easing pressure on domestic supply chains.

Infrastructure Investment and Jobs Act (IIJA)

Guardrails: The IIJA has built-in safeguards to ensure that its funding supports the creation of quality jobs and enhances workers' voices. For discretionary funding, applicants for competitive grants must demonstrate that their projects create well-paying jobs, offer workers the option to join a union, use project labour agreements, and establish registered apprenticeships. For Department of Energy-related funding, applicants must submit a CBP explaining how the local communities will benefit, or avoid harm, from the funded projects. While this requirement has limited enforcement power, it obliges applicants to assess the impact of projects on disadvantaged communities.

Conditionalities: The Build America, Buy America (BABA) Act is a key requirement of the IIJA, significantly expanding domestic content requirements. IIJA-funded projects must use 100% iron and steel produced in the US, with additional rules for manufactured products and nonferrous construction materials. At least 55% of the value of these products (excluding labour) must be manufactured in the US. To address potential supply chain challenges, agencies can grant waivers, reviewed by the Made in America Office (MIAO), allowing time for transition and addressing economic feasibility. This process encourages transparency, requiring firms to justify why US manufacturing is not viable and providing insights into the US manufacturing supply chain's strengths and weaknesses. While these provisions support domestic industry and union labour, they can pose risks to competition and economic growth, a common concern with federally funded infrastructure projects in various countries.

Source: Reynolds, E. (2024), "U.S. Industrial Transformation and the "How" of 21st Century", *Journal of Industry, Competition and Trade* (2024) 24:8, <https://doi.org/10.1007/s10842-024-00420-x>.

Conditionalities and guardrails may play an effective role to add pro-competitive elements to industrial policy. However, contextual factors in shaping industrial policy effectiveness are very important, and a one-size-fits-all approach will be inadequate. Instead, policies will need to be tailored to respond to specific circumstances and objectives (Mazzucato and Rodrik, 2023^[55]).

Governance of industrial policy

Governance of industrial policy is key for its success and ensuring it is pro-competitive. The “DARPA model”³² is a US approach that is considered successful in reconciling industrial policy with competition and entry (Aghion, 2023^[47]). It has created the foundation for several breakthrough technologies, including the internet and GPS. DARPA projects have three key characteristics: (i) DARPA projects lie between basic and applied research, (ii) research is organised toward specific goals and (iii) the existence of co-ordination problems makes large-scale funding and testing of the technology difficult without public intervention (Aghion, 2023^[47]). Although DARPA project focus on innovations in the area of defence, it has been instrumental also in a number of non-defence innovations. Today, DARPA continues to play a crucial role in high-risk projects. Its unique approach combines top-down funding with bottom-up program management, fostering collaboration and competition. In Europe, there are increasingly calls for the establishment of European agencies modelled after the US (Aghion, 2023^[47]; Deffains, d’Ormesson and Perroud, 2020^[4]). Such an institutional set-up is argued to provide EU support for the development and commercialisation of innovative technologies.

3.1.3. Industrial policy to address market failures

A guiding principle for industrial policy is that they should address market failures, improving social welfare. Liu (2019^[60]) confirms that using market imperfections as guiding principle for where to allocate industrial policy can be successful strategy as this can prevent a compounding distortionary effect in a sector. The extent to which a given policy will address market failures depends on choosing pro-competitive industrial policy instruments and/or designing them pro-competitively. Some instruments may be more pro-competitive than others, and given a chosen instrument, its design can be more or less pro-competitive. Both are discussed below.

Choice of industrial policy instruments and strategies

The effect of industrial policy instruments on competition is far from obvious as it depends on many factors, including the industrial policy’s design, implementation, and specific objectives, but also the nature of competition and the structure of the market (Eaton and Grossman, 1986^[61]). Moreover, existing empirical work often studies the impact of industrial policy on different outcome measures, without considering indirect costs and potential negative impacts in terms of market distortions (Piechucka, Sauri-Romero and Smulders, 2023^[24]). Nevertheless, existing literature provides some guidance. Below follows a brief discussion of (i) some general presumptions about the effects of types of instruments on competition, as well as (ii) some possible distortive effects that subsidies can have on competition as they are the most used type of industrial policy instruments (see section 2.2).

Firstly, industrial policy that supports technologies that are still far from the market, i.e. still in early stage of development (Anderson et al., 2021^[23]), are less likely to distort competition. By maintaining a distance from the market, the intervention is less likely to distort the competitive process and natural allocation of

³² Defense Advanced Research Projects Agency (DARPA), see also endnote 3. DARPA was established after the US lost the space race battle against the Soviet Union when Sputnik became the first artificial satellite to orbit the Earth in 1957. BARDA, a similar model for the US biotech sector, supported competing vaccine projects during the COVID-19 crisis, including BioNTech and Oxford-AstraZeneca (see also Box 2.3).

resources driven by market forces. Stimulating basic R&D or investing in generic human skills are good examples.

Moreover, horizontal instruments are generally less distortive of competition than targeted instruments as the latter risk unleveling the playing field by favouring certain industries or firms. Among the main types of horizontal policy are i) investing in the knowledge economy (especially higher education and public research), ii) reforming labour and product markets to make them more dynamic, through appropriate policies for competition, unemployment insurance and professional training; and iii) developing venture capital and private equity to provide funding for innovation (Aghion, 2023_[47]). However, most industrial strategies, if not all, have a targeted element in them, mostly because horizontal policies are often considered not sufficient to reach its objectives, and the government needs to be more targeted in its support.

Furthermore, within the realm of targeted policies, demand-side instruments are generally less distortive than supply-side instruments. They are more likely to affect indirectly all the relevant firms, irrespective of their size, age or connections with the administration (Criscuolo et al., 2022_[2]). Supply-side instruments, while potentially more distortive to competition, are some of the most direct instruments for changing firms' behaviour, for instance by providing firms with incentives to invest by decreasing costs or risks or improving access to inputs.

As discussed in section 2.1.2, there is a plethora of instruments that can be chosen, and it is beyond the scope of this paper to identify the possible impact on competition of all (or even most) of them.³³ However, for the discussion, we briefly elaborate on presumed impacts of subsidies on competition. A subsidy can address different market failures. For instance, it can stimulate entry of firms (addressing potential market power) or encourage behaviour or investment that creates positive spillovers in society or tackles coordination issues. There are many different types of subsidies and their design matters (OECD, 2023_[10]).³⁴ When poorly rationalised or designed, they can distort both trade and competition, even if empirical analysis of the effects of industrial subsidies on trade and competition is scarce (OECD, 2023, p. 4_[10]).³⁵

Table 3.1 provides examples of effects of subsidies on competition, building on existing empirical research.

³³ To tackle the three market failures defined in section 2.1.2, beside some first-best instruments, there is an almost endless list of second-best instruments which could tackle these problems at least partially, even if not equally well (Juhász, Lane and Rodrik, 2023_[1]).

³⁴ The Trade and Agriculture Directorate (TAD) of the OECD has developed a taxonomy of government support measures, building on its longstanding work to identify and measure government support across sectors (OECD, 2023_[10]). This taxonomy categorises support measures according to their formal incidence and their transfer mechanism (e.g. direct transfer of funds tax revenue foregone).

³⁵ Criteria for the favourability of subsidies can vary between the perspectives of competition and trade. While in a trade context, the impact of subsidies is often jurisdiction-specific or sector-specific (assessing their effects on global markets and international trade), from a competition perspective, the focus is mainly on economic efficiency (OECD, 2022_[123]).

Table 3.1. Examples of potential competition effects of subsidies

Pro-competitive effect	Potential distortion of competition
<ul style="list-style-type: none"> • Entry and investment subsidies have dynamic consequences as new firms continue to operate after the end of the intervention. (Barwick, Kalouptsi and Zahur, 2021^[51]) • Subsidised firms grew faster than those never subsidized for 30 years after subsidies ended (Choi and Levchenko, 2022^[62]). • Tax policies (e.g. VAT exemptions) can have a pro-competitive role by intensifying competition from credit-constrained firms through better investment and higher productivity (Liu and Mao, 2019^[63]). • Subsidies designed to produce inter-firm competition in innovation increase the likelihood of commercial success and reduce uncertainty exposure (Lipse and Carlaw, 2021^[64]) • Innovation subsidies produce spillovers to related sectors. (Lipse and Carlaw, 2021^[64]) 	<ul style="list-style-type: none"> • Tax incentives may protect well-established firms, reducing the dynamism of the growth distribution, and slow down the reallocation of resources to new firms. (Bravo-Biosca, Criscuolo and Menon, 2013^[65]) • Subsidising incumbent firms may discourage the entry of new, higher-performing firms as a result of a “reallocation effect”: incumbent firms increase the demand for skilled labour and other factors of production, thereby increasing entry costs for newer, more efficient, firms. (Acemoglu et al., 2018^[52]) • Entry subsidies are wasteful as they attract small and inefficient firms, leading to increased industry fragmentation and overcapacity in the market. (Barwick, Kalouptsi and Zahur, 2021^[51]) • R&D subsidies may lead to crowding out of private R&D investment and favouritism towards certain technologies. (Wilson, 2009^[66]) • More generous R&D tax subsidies for SMEs narrow productivity gaps internally, enhancing their productivity and competitiveness, but exacerbate the size gap between national and global frontier firms, potentially favouring inefficient incumbents over innovation. (Andrews, Criscuolo and Gal, 2015^[67]) • Innovation subsidies may encourage the survival and expansion of low-innovative firms. (Acemoglu et al., 2018^[52]) • While export subsidies may boost the competitiveness of national firms on international markets, they can distort international markets by altering the dynamics of the market. (McDonald, Ruta and Van Heuvelen, 2024^[68]) • Export subsidies may become a part of large exporter firms’ profitability, making these subsidies more valuable for firms with strong market positions. (Desai and Hines Jr., 2008^[69])

Source: Author

Many of the results in the above table are context-specific, but it provides an indication of how subsidies, for its right intentions, may be positive or distortive to competition. Such effects of subsidies, however, can change quickly when multiple instruments are used – which is often the case (even if the results become more difficult to disentangle).

Design of industrial policy

To avoid or minimise distortions through targeted industrial policy, ensuring competitive neutrality is an important guiding principle. On 31 May 2021, the OECD Recommendation on Competitive Neutrality³⁶ was adopted, establishing a set of principles that promote a level-playing field among competitors. It recommends adopting and maintaining neutral market rules, so that adhering governments ensure that the legal framework is neutral, and that competition is not unduly prevented, restricted or distorted. Moreover, the recommendation calls governments to avoid selective advantages to certain entities and measures that may unduly enhance an enterprise’s market performance and distort competition. The OECD Competitive Neutrality Toolkit (forthcoming^[70]) also recommends that state support measures should be timebound and include clear exit strategies, in order not to perpetuate state support beyond the necessary and maintain incentives to increase efficiency and innovation.

Further to competitively neutral policy instruments, Piechucka, Sauri-Romero and Smulders (2023^[24]) propose a framework of assessment for the design of industrial policies. This framework includes an analysis of the costs and benefits of industrial policies by making the trade-offs explicit in terms of

³⁶ See OECD, Recommendation of the Council on Competitive Neutrality [OECD/LEGAL/2021].

efficiencies achieved and competition distortions introduced by the policies. This analysis should help ensure that the industrial policy intervention is designed to address the market failures, but pays careful attention to its potentially distortive impact(s). It builds on the European experience with state aid control and resembles its “balancing test” (described in section 3.2.5)³⁷:

1. Address market failures

- a) *Identify the market failure(s)*. The analysis starts with the identification of the relevant market failures, which highlights the need for government intervention.
- b) *Choose the policy tool(s) that can best address them*. The second step consists of choosing the right instrument(s) to address the market failure(s).³⁸ The chosen mix of instruments should be coherent, with each intervention addressing the *residual* market failure left unaddressed by others. An analysis of the factual and counterfactual analysis – how firms are expected to behave with and without the intervention – should focus on interventions that are likely to trigger more efficient behaviour by firms. This analysis of two scenarios also facilitates a quantitative assessment of the minimum required support needed – the direct cost of the intervention for taxpayers.

2. Limit distortions

- a) *Identify potential distortions and their theory of harm*. Key in this step is to obtain an understanding of the potential impact the proposed industrial policy instrument may have on competition in the market concerned as well as related markets (upstream, downstream and complementary or adjacent).
- b) *Choose the policy tool(s) that minimize(s) market distortions*. Such distortions can depend on the degree of selectivity but many other factors.

The authors argue also that the criteria used to perform the so-called compatibility assessment under State aid rules – necessity, proportionality, incentive effect and appropriateness – provide guiding principles for industrial policy.

Whatever framework of analysis is used, industrial policy should be carefully designed, narrowly tailored to solve the issue identified and should be temporary and monitored closely (OECD, 2020_[71]).

3.2. Competition policy affecting industrial policy

A second aspect of the interaction between both policies lies in how competition policy, particularly through its enforcement, can significantly contribute to the effectiveness of industrial policy by preserving competitive markets. It is in this context that competition policy can be seen to be a form of industrial policy – industrial policy works best in competitive markets (Aghion et al., 2015_[45]).

Although this implies that all forms of competition enforcement are supporting or strengthening industrial policy, there are some instances where the interplay is more evident. In those situations, elements of competition enforcement can actively support or strengthen industrial policy, especially when targeted to industries that are key for industrial policies. They are discussed below.

3.2.1. Merger control

Discussing the interplay between merger control and industrial policy relates to whether, and if so how, industrial policy objectives should play a role in merger control. On the one hand, industrial policy may

³⁷ A similar framework of analysis was suggested by the OECD in 2020 when governments stepped in with large amounts of state support following the outbreak of the COVID-19 pandemic (OECD, 2020, pp. 18-21_[44]).

³⁸ Taking into consideration other, non-industrial policy, ones that may already address some market failures.

favour the creation of a larger domestic (or regional) firm through a merger (sometimes referred to as a national or industrial “champion”). This would allow the firm, as goes the argument, to better compete on a larger (e.g. global) market. However, on the other hand, such practice may conflict with competition policy when it significantly distorts competition on that or another (smaller) market, reducing economic welfare.

The latest episode of fierce debate in this regard was the prohibition by the EC of the proposed acquisition of Alstom’s transport equipment and service activities by Siemens in February 2019, adhering to its solely competition-based test.³⁹ While proponents argued that creating a European rail giant would have enhanced European competitiveness in a global market, especially in light of intensifying competition from heavily subsidised Chinese companies, critics raised concerns about potential negative impacts on competition, innovation, and consumer welfare.⁴⁰

Siemens/Alstom was certainly not the first or only instance where the discussion about national champions had arisen in Europe. Similar discussions appeared, for instance, when the EC prohibited Aérospatiale-Alenia/de Havilland⁴¹ in 1991, (conditionally) cleared Boeing/McDonnell Douglas⁴² in 1997 and blocked General Electric/Honeywell⁴³ in 2001.⁴⁴ Moreover, after the global financial crisis that followed from the collapse of Lehman Brothers in 2008, tension arose between industrial and competition policy, as several governments, especially in Europe, expressed concerns over cross-border mergers in politically sensitive sectors such as banking and energy, and attempted to create or protect their national champions (OECD, 2009, p. 12_[72]).

In the aftermath of the Siemens/Alstom case, the EU issued a “New Industrial Strategy for Europe” in 2020, leaving its competition policy unchanged. Indeed, empirical evidence does not provide sufficient support for a national champions policy (OECD, 2009_[72]). However, the EC did turn its attention to the implementation of a new trade and competition tool to address one of the expressed major concerns, an unlevel global playing field as a result of significant financial support in some countries, most notably by adopting the Foreign Subsidies Regulation (FSR) in 2022 (see Box 3.3).

³⁹ Siemens/Alstom (COMP/M.8677), Commission decision of 6/2/2019.

⁴⁰ Even before the prohibition decision, nineteen EU governments made a call for “*the identification of possible evolutions of the antitrust rules to better take into account international markets and competition in merger analysis*”. The statement urged for an update of the European competition rules to maintain Europe’s competitiveness and face fierce competition from other large economies with proactive industrial strategies”. This was followed, briefly after the prohibition, by the German/French “Manifesto for a European Industrial Policy fit for the 21st Century” which advocated a change of EU’s competition rules.

⁴¹ Aérospatiale-Alenia/de Havilland ([1991] OJ C 59/1), Commission decision of 25/2/1991.

⁴² Boeing/McDonnell Douglas ([1997] OJ L 336/16), Commission decision of 30/7/1997.

⁴³ GE/Honeywell ([2004] OJ L 48/1), Commission decision of 3/7/2001.

⁴⁴ See for instance (Buhart and Henry, 2019_[95]) for a further elaboration on earlier cases.

Box 3.4. Foreign Subsidies Regulation

The EU Foreign Subsidies Regulation (FSR) contains the main substantial and procedural rules on tackling distortive foreign subsidies on the European internal market. On 12 January 2023, the FSR entered into force, and it applies since 12 July 2023.

The FSR has three key elements to scrutinise foreign subsidies, (two prior notification systems and an ex-officio control mechanism):

1. Prior notification of a certain size merger transaction with significant foreign subsidies.* The EC will assess whether there is “a distortion on the internal market”, an assessment which will be “limited to the context of the concentration at stake”. A distortion of the internal market would arise where a foreign subsidy is liable to improve the competitive position of the business in the internal market and where, in doing so, it actually or potentially negatively affects competition on the internal market.
2. In the context of public procurement, notify the contracting authority of any foreign subsidies received in the preceding three years, if it is an EU public tender with a value exceeding EUR 250 million.
3. Ex-officio investigations based on the EC’s own initiative to consider information from any source related to potentially distortive foreign subsidies, as well as reviews into awarded EU public procurement contracts.

The legal framework of the FSR introduces an effects-based balancing test, allowing the Commission to weigh the negative effects of a foreign subsidy against any positive effects arising from the development of the subsidised activity. This includes considering other public interest considerations, such as the subsidy’s broader positive effects on EU policy objectives (such as the green and digital transitions). The test is similar to the State aid balancing test, even if it is not yet entirely clear how the instrument will be implemented in practice.

The analytical approach of anti-competitive foreign subsidies consists of four steps:

1. Characterisation of a foreign subsidy conferring a selective benefit to the recipient;
2. Characterisation of a distortion of competition;
3. Balancing the negative and positive effects of the subsidy;
4. Commitment and remedial measures.

Note : * If one of the undertakings is an EU company with aggregate annual turnover of at least EUR 500 million in the EU and the concentration received more than EUR 50 million in subsidies from third countries within the three years prior to the transaction
Sources: Damelet, L. (n.d.), “EU Foreign Subsidies Regulation”, Global Dictionary of Competition Law, Concurrences, Art. N° 109790, <https://www.concurrences.com/en/dictionary/foreign-subsidies>; OECD (2022), “Subsidies, Competition and Trade”, OECD Competition Policy Roundtable Background Note, <http://www.oecd.org/daf/competition/subsidies-competition-and-trade-2022.pdf>; European Commission (2021), Proposal for a regulation of the european parliament and of the council on foreign subsidies distorting the internal market.

Episodes such as Siemens/Alstom show that merger control can affect industrial policy in two ways: (i) merger control can be an instrument of industrial policy (by preventing an anti-competitive merger and

hence keeping markets competitive), or (ii) merger control can, within its competition assessment framework, take into account industrial policy considerations.⁴⁵

Merger control as an instrument of industrial policy

Firstly, merger control can be an instrument of industrial policy by preventing a merger to substantially lessen competition. In this role, competition authorities ensure that the market(s) in which the merger would take place continue(s) to function well.⁴⁶ Certain industries identified for industrial policy have demonstrated a greater tendency toward heightened or rising market concentration. The concern of certain industries becoming too concentrated have led many jurisdictions to explore ways in which they can enhance jurisdiction over mergers, in particular review more (smaller) mergers (OECD, 2023, pp. 21-22^[73]). New measures include different types of notification thresholds, singling out a specific list of companies and expanding powers to allow competition agencies to review mergers below relevant merger notification thresholds. Such increased scrutiny of smaller acquisitions (or “killer acquisitions” and “reverse killer acquisitions⁴⁷), for instance by focusing on a specific industry, may result in increased competition, affecting (or helping achieve) certain industrial policy objectives.

Including industrial policy considerations in a merger assessment

Secondly, there may be ways in which industrial policy considerations can be taken into account in the competitive assessment of a merger. Such elements include possible efficiencies that can be argued to compensate for potential competition-distortive effects and the assessment of potential competition, more specifically the timeframe taken into consideration.

3.2.2. Efficiencies

Part of merger control in most jurisdictions is the assessment of potential efficiency gains of a merger, to be weighed against any potential anti-competitive effects of the merger. In those jurisdictions, mergers that lead to merger-specific and verifiable efficiencies are more likely to be allowed, including for instance efficiencies that result from economies of scale. As such, if the creation of a large firm through a merger (say a “national champion”) generates efficiencies that outweigh the adverse effects to competition, a merger may be approved on these ground – under the conditions that exist for such efficiencies in the relevant jurisdiction, such as efficiencies being merger-specific and verifiable and benefit consumers.⁴⁸

The situation becomes more complicated when efficiencies arise in markets other than those in which harm to competition occurs (out-of-market, or OOM, efficiencies), such as environmental efficiencies. Many

⁴⁵ Public interest considerations can provide a window for industrial policy to affect, or override, the outcome of merger control (OECD, 2016^[96]). However, the vast majority of jurisdictions has not integrated such considerations into the competition authority’s merger review process. Instead, they exempt mergers from the competition authority’s assessment or allowing other public bodies’ merger-related decisions to override that of the competition authority. South Africa is an exception, as Section 12A of the South African Competition Act 1989 states that in merger cases there should be two assessments: a competition and a public interest assessment, balancing i) the traditional competition considerations and ii) public interest concerns. When performing the second of these two assessments, the Commission or the Tribunal must consider various factors, including the effect of a merger on a particular industrial sector or region and the ability of national industries to compete in international markets.

⁴⁶ See also a recent blog by ACM-Chairman Snoep, who argues that competition authorities are “a necessary check on corporate power” (Snoep, 2024^[110]).

⁴⁷ See for a discussion on such acquisitions for instance (OECD, 2020^[76]).

⁴⁸ EU Guidelines on the assessment of horizontal mergers under the Council Regulation on the control of concentrations between undertakings (2004/C31/03).

jurisdictions are not open to OOM efficiencies, and the question of whether OOM efficiencies should be included in the assessment of a merger raises ethical questions as well as constitutional, institutional and legal considerations specific to each jurisdiction. Consequently, while *“allowing OOM efficiencies claims could profoundly change the assessment of mergers (and agreements) in jurisdictions presently restricting such claims, it will unlikely do so in practice”* (OECD, 2023^[74]).

In summary, despite it being a narrow one, efficiencies could potentially provide for a path to adhering to some industrial policy considerations within a merger control review (see also (Deffains, d’Ormesson and Perroud, 2020^[4]).

3.2.3. Potential competition and the timeframe of assessment

Next to efficiencies, a second element within the merger assessment that could potentially provide an opening for accommodating (some) industrial policy considerations could be an adjusted assessment of potential competition, and more specifically the used timeframe for the analysis. After all, it matters whether the time-horizon for the likely effects of the merger is established at one year, three years, five years or even ten years. A shorter timeframe may be attractive for competition authorities as this means less uncertainty about (near) future events. A longer timeframe may do better justice to the economic reality, but may also increase enforcement unpredictability and legal uncertainty due to the inherent difficulties of predicting future effects.

Competition authorities often consider a timeframe of around two to three years for the assessment of the effects of a merger, even if they leave scope for extending that timeframe where there are factors (e.g. contractual) that provide more confidence about what will happen in the future (OECD, 2021^[75]). In some cases, especially rapidly developing or dynamic markets, this timeframe is crucial for the analysis.⁴⁹ A timeframe that is too short may ignore or underestimate the presence or strength of potential competition. This risks, for instance, understating the competitive harm that can be generated by a nascent acquisition (OECD, 2020, p. 22^[76]), clearing an acquisition, or, in the opposite case, taking insufficiently into account the potential competition of third parties, blocking a transaction. This can also be the case when industrial policy considerations play a role. The treatment of entry by potential competitors was exactly a fiercely contested issue in the Siemens/Alstom merger.⁵⁰

⁴⁹ See for instance (OECD, 2020^[76]), in which the timeframe was argued to be particularly relevant for acquisitions of nascent firms, because they may, if remaining independent, only start to exert competitive pressure in a couple of years.

⁵⁰ In the case, the EC concluded that Asian suppliers CRRC (China Railway Rolling Stock Corporation), Hyundai-Rotem and Kawasaki could not be considered as potential competitors to Siemens/Alstom in the EEA markets for high and very high-speed rolling stock, which are characterised by high barriers to entry. While the EC did not agree with Siemens/Alstom’s proposed timeframe of 5-10 years for the assessment of potential competition, it nevertheless noted that, *“even if a 10 years’ timeframe was considered, new market entry could not be deemed sufficiently likely to exercise a significant competitive constraint on the merged entity”* (Siemens/Alstom (COMP/M.8677), para 495). Interestingly, developments in early 2024 have shed more light on the adequate timeframe of assessment in the Siemens/Alstom case as CRRC had become the first undertaking facing an in-depth investigation under the new EU Foreign Subsidies Regulation. On 22 January 2024, just under five years after the prohibition decision, the contracting authority concerning the Bulgarian procurement procedure for the project ‘Bulgaria-Sofia: Railway and tramway locomotives and rolling stock and associated parts’ forwarded a notification under Article 29(1) FSR from Chinese CRRC. The (back then) unlikely possibility of CRRC becoming an actual competitor may have become a reality (Torres Méndez, 2024^[37]), even though a caveat needs to be made that the exact relevant market(s) in this tender may differ from those assessed in the Siemens/Alstom merger. After the EC published a [summary notice](#), informing about the in-depth investigation and inviting third parties to submit comments, CRRC [withdrew](#) from the tender in Bulgaria and the EC closed its investigation.

Different scholars (Jenny and Neven, 2019, p. 4^[77]) have indicated that the horizon taken into account for the assessment of competitive constraints may be unduly short, and (OECD, 2021^[75]) also indicates that extending the timeframe could be useful.

In summary, a thorough analysis of potential competition is required, and the assessment can have an impact on industrial policy considerations. In some specific instances, a different assessment that considers a longer timeframe and potential competition may be considered to increase the scope for incorporating industrial policy considerations. By looking further into the future, such assessments encompass greater uncertainty, require more value judgments, and involve more probabilistic scenarios.

3.2.4. Co-operation agreements and abuse of dominance

Co-operation agreements

Co-operation agreements between competitors may have ambiguous effects, as they can be beneficial for consumers as well as serve to reduce competition. They can act as a tool to overcome certain market failures, such as knowledge spillovers (e.g. through joint investment in R&D) or co-ordination failure (e.g. investment in complementary technologies), without needing government intervention. Such agreements may be supportive of industrial policy. Typically, relatively low-risk co-operation (from a competition perspective) involves joint R&D, joint purchasing arrangements, joint advertising, standards setting arrangements, and technology licensing agreements (OECD, 2023, p. 11^[78]).⁵¹

Using the anti-competitive agreement toolbox, competition authorities can more actively support industrial policy in a number of ways. A first way in which competition authorities can support certain industrial policy objectives is by prioritising its enforcement efforts towards certain industries (or types of cases), for instance when an industry is an important target for industrial policy and the competition authority has reason to suspect that competition in that industry may be limited or hindered. This could lead to an increased focus on fighting unlawful conduct, such as green washing cartels⁵², or, increased vigilance with co-operations or alliances⁵³. This helps keeping markets contestable and address priorities that are in line with, or support, industrial policy, in turn increasing the latter's effectiveness.

Secondly, and somewhat on the flip side, competition authorities could provide clarity about what types of co-operation and agreements are considered in line (or not) with competition law which allows for a careful and complete analysis. An example of this relates to sustainability agreements, as it is argued that the lack of clear guidance as to how competition rules may apply to co-operation agreements that contribute

⁵¹ Excluded from the scope of this section are agreements considered to be cartel conduct, such as price fixing, bid rigging and customer or market allocation, that are per se illegal in all jurisdictions.

⁵² Cartels whereby companies may collectively overcharge consumers under the excuse of environmental protection, or cases where companies together soften or eliminate competition on the parameter of product differentiation that is the one of sustainable quality or innovation (OECD, 2021^[80]). In 2021, the European Commission fined automakers Daimler, BMW and Volkswagen group (Volkswagen, Audi and Porsche) for [restricting competition](#) in emission cleaning for new diesel passenger cars. While they possessed the technology to reduce harmful emissions beyond what was legally required under EU emission standards, they avoided to compete on using this technology's full potential to clean better than what is required by law. In 2023, the Korea Fair Trade Commission sanctioned German automakers Mercedes-Benz Group, BMW, Audi, and Volkswagen AG for a [similar offense](#), namely for colluding to limit emissions-cleaning technology for their diesel cars.

⁵³ For instance, the complexity of the green transition has led many industries to form alliances to tackle problems together. In the EU alone, several alliances have been formed or announced, such as the Alliance for Zero-Emission Aviation, European Solar Photovoltaic Industry Alliance, the European Battery Alliance.⁵³ Numerous similar alliances at national level exist. These alliances bring together a wide range of public and private partners in a given industry or value chain and must comply with competition rules (OECD, 2023, pp. 10-11^[78]).

towards a more sustainable society may disincentivise firms from pursuing the path of co-operation, even when they may be beneficial.⁵⁴ Currently, there is growing evidence that many businesses are looking to work together to fight climate change, but often fear that competition law limits what they can do (De Backer et al., 2023^[79]). To address this issue, several competition authorities have developed guidelines for sustainability agreements, with the aim to provide general guidance on how agreements that pursue sustainability objectives are assessed from a competition perspective.⁵⁵ Such guidelines allow competition authorities to be explicit about safe harbours⁵⁶ or exemptions from competition law for certain type of sustainability agreements. In addition, they allow competition authorities to elaborate and provide guidance on the analysis conducted, including the consideration of all effects. This may be required as there are agreements that, although anti-competitive in a first analysis, can be considered to meet the requirements to benefit from an exemption or that generate beneficial effects that outweigh the competition restriction or otherwise meet the requirement of providing benefits to the consumers (OECD, 2021^[80]). However, such agreements are likely harder to be self-assessed, creating reluctance for firms to enter into socially desirable co-operation.

In conclusion, a competition authority's activities related to cartel enforcement, or co-operation agreements, can further or strengthen industrial policy objectives. This relates to providing better guidance on the one hand to create the desired incentives, and enforcing more vigorously where needed on the other hand, both aimed at making for a more competitive industry.

Abuse of dominance

Similarly, addressing abuses of dominance can be an important complement for successful implementation of industrial policy. While industrial policy may focus on fostering innovation, entry and competition, incumbents may use their market power to illegally prevent future competitors from entering or current competitors from expanding.

A well-documented example is the telecommunications industry in the US in the 60s and 70s, where new innovative firms were eager to enter the market with their innovations, such as the home modem and dial-up computer networking. However, as a consequence, the incumbent AT&T impeded these potential entrants from entering, employing multiple tactics such as blocking the emergence of standards and

⁵⁴ An example of co-operation that can be exceptionally authorised by competition authorities are “crisis cartels”, i.e. agreements among most or all competitors to restrict output and/or reduce capacity to increase profitability and prevent market exit in times of crisis. Such co-operation may be necessary during time of crisis to increase the production of a certain product or co-ordinate an essential service. They may even be promoted or facilitated by governments. Co-operation between competitors may indeed increase consumer welfare by making more products available, and most competition laws allows for competitor co-operation when there are efficiencies and consumer benefits. However, competition authorities should ensure that such co-operation does not spill over into hard-core restrictions of competition, such as price fixing (OECD, 2020^[112]).

⁵⁵ Examples are the [sustainability guidelines](#) of the Japan Fair Trade Commission (JFTC), the [rules on sustainability agreements](#) of the Netherlands Authority for Consumers and Markets (ACM), the [Sustainability Sandbox](#) developed by the Hellenic Competition Commission (HCC), Chapter 9 on sustainability in the EC's [revised draft horizontal guidelines](#), the [collaboration guidance note](#) by the Competition & Consumer Commission of Singapore (CCCS) and the [collaboration and sustainability guidelines](#) by the New Zealand Commerce Commission. See (OECD, 2021^[80]) for a more detailed analysis of environmental considerations in competition enforcement.

⁵⁶ Safe harbours in competition enforcement, especially for (M)SMEs, reduce the level of scrutiny for their activities, fostering their development. By exempting smaller businesses from certain competition rules or providing leniency for their conduct, safe harbours alleviate compliance burdens and legal uncertainties. This allows (M)SMEs to focus more on innovation, growth, and market expansion without fear of excessive regulatory intervention. Consequently, safe harbours promote a conducive environment for (M)SMEs to thrive, encouraging entrepreneurship and fostering economic dynamism.

punishing customers who did business with AT&T's competitors. The enforcement action by the Department of Justice ultimately ended with the breakup of AT&T (Wu, 2012^[81]). This case demonstrates that exclusive conduct can block entry and innovation, notably from outside of the current market. Moreover, this example of a shift towards a new technology (internet) in the telecom industry may explain why several recent cases have been examined in the digital space in which the negative effects on innovation from unilateral conduct by a dominant firm (OECD, 2023^[78]).

A parallel can also be drawn to the role that Article 102 TFEU cases have played during and after the liberalisation wave of network sectors in Europe in the 1990s and early 2000s. Competition policy, through the enforcement of abuse of dominance cases, played a substantial supporting role to the structural change resulting from the liberalisation efforts in the energy, telecoms and postal sectors. Such competition enforcement ensured that the expected gains from liberalisation, including lower prices⁵⁷, would not be captured by incumbents by preventing entry through illegal practices. Indeed, liberalisation of the energy, telecoms and postal sectors were followed by several infringement decisions in these sectors, especially targeted to incumbent monopolists (Dethmers and Blondeel, 2017, p. 2^[82]).⁵⁸

Some of the recent industrial policy (e.g. to facilitate the green transition, reduce dependencies on crucial inputs such as microchips or facilitating the digital transition) foresee an important role for innovation. Competition authorities around the world can use, and have used, this avenue of competition enforcement to keep markets contestable and competitive, ultimately supporting industrial policy.

3.2.5. State Aid

The control of state aid, largely an EU-phenomenon⁵⁹, can be a relevant instrument to guide or support industrial policy. In Europe, the state aid regime is primarily a tool to protect the internal market by avoiding different Member States competing against each other through aid measures.⁶⁰ Article 107 of the Treaty on the Functioning of the European Union (TFEU) prohibits any aid provided by a Member State which distorts or threatens to distort competition by favouring certain undertakings or the production of certain goods, in so far as it affects trade between Member States. Any state aid should be proportionate and appropriate, and the EC undertakes a 'balancing test' to prevent inefficient use of taxpayers' money and maximise benefits for society ((OECD, 2021^[83]), Box 3.6). Such balancing test requires an answer to three questions:

1. What is the objective of the aid? (the relevant market failure). Is it a well-defined objective of common interest?

⁵⁷ One of the main objectives of the liberalisation efforts in network industries has been to bring prices for consumers as close as possible to market prices (European Commission, 2013^[111]).

⁵⁸ Cases involved, for instance, cross-subsidisation (revenues from profitable letter-mail monopoly to finance below-cost pricing in business parcel services, where it faced competition, case COMP/35.141 – Deutsche Post AG), or market foreclosure (energy contracts by incumbent energy providers with industrial consumers that prevented customers from switching to other suppliers, Long-term electricity contracts in France, Case COMP/39.386)).

⁵⁹ Few jurisdictions outside the EU have subsidy control regimes. Exceptions are the UK, following Brexit, some candidate and neighbouring countries of the EU and regional trade blocs such as the WAEMU (see (OECD, 2021^[83]), Box 3.7), but the EU regime remains the most extensive.

⁶⁰ “[...], the single market is Europe's best asset for generating sustainable growth. An effective internal market requires the deployment of two instruments: first, regulation to create one integrated market without national borders and, second, competition policy including State aid control to ensure that the functioning of that internal market is not distorted by anticompetitive behaviour of companies or by Member States favouring some actors to the detriment of others. (EC [Communication](#) on State Aid Modernisation of 2012).

2. Does the aid address the relevant market failure or another objective? Is it appropriate (incentive effect) and proportionate?
3. Does the positive impact of the aid outweigh the distortions to competition and trade?

However, EU State aid rules already allow, to a certain extent, to achieve European (industrial or other) policy objectives (Blockx, 2021^[84]; Deffains, d’Ormesson and Perroud, 2020^[41]).⁶¹ This can be done in a number of ways. Firstly, the ability to grant block exemptions by way of regulation are a useful tool for the Commission.⁶² For instance, on 23 June 2023, the Commission adopted a targeted amendment⁶³ to the General Block Exemption Regulation (GBER) to further simplify and speed up support for the EU’s green and digital transitions.⁶⁴ Secondly, article 107(3)(b) TFEU provides for the possibility of approving state aid for ‘important projects of common European interest’ (IPCEIs). Such IPCEIs play an increasingly important part in the EC’s efforts to ensure a greener, digital, more secure, resilient, and sovereign European economy.⁶⁵

Finally, in March 2023, the EC adopted new State Aid rules on ‘Matching Aid’ aimed to prevent firms moving their investments away from Europe. This principle allows the provision of either (i) the amount of aid a beneficiary could receive for an equivalent investment in an alternative location, or (ii) the amount of aid needed to incentivise the company to locate the investment in the EEA (the “funding gap”), whichever is the lowest. In January 2024, the EC used the “matching aid” principle for the first time, approving a EUR 902 million in German State aid to support Northvolt in its construction of an electric vehicle battery production plant to prevent the company to move the investment to the US to benefit from the Inflation Reduction Act (IRA).⁶⁶

Although state aid is almost entirely a European phenomenon, and some view the pursuit of objectives broader than purely competition as undesirable (Deffains, d’Ormesson and Perroud, 2020^[41]), important lessons for industrial policy can be drawn from the regime, including the assessment of aid and the focus on efficiency and market failures. This can for instance be interesting for federal countries where industrial policy is partly a sub-federal responsibility. Such lessons have been discussed in section 3.1.1.

⁶¹ Deffains, d’Ormesson and Perroud (2020^[41]) discuss how State aid rules are used for other objectives that purely competition, including for industrial policy objectives, tax harmonisation or banking regulations.

⁶² The Commission has a General Block Exemption Regulation (GBER) for State aid. This sets out certain categories of state aid (and relevant conditions and maximum amounts) that do not need to be approved by the Commission. (OECD, 2021^[83]) In 2021, 93% of new state aid measures (excluding Covid measures) fell under the GBER. There is also a separate block exemption for aid for agriculture, forestry and rural areas (State Aid Scoreboard 2022, European Commission, 24 April 2023).

⁶³ [Commission Regulation \(EU\) 2023/1315](#) of 23 June 2023 amending Regulation (EU) No 651/2014.

⁶⁴ [Regulations - European Commission \(europa.eu\)](#).

⁶⁵ Approved IPCEIs focus on, for instance, the [batteries value chain](#), the [microelectronics value chain](#) and the [hydrogen value chain](#).

⁶⁶ [€902 million German State aid measure to support Northvolt \(europa.eu\)](#).

4 The Role for Competition Authorities in Promoting Pro-Competitive Industrial Policies

What role can, or should, competition authorities have in a world that witnesses a proliferation of industrial policies? Implementation of industrial policy does not depend on competition authorities but on governments, including parliaments, ministries, or agencies in charge of disbursing funds or drawing up legislation. Since this is a prerogative of other state entities, many competition authorities have not been involved much, if at all, with the design of government interventions. However, competition authorities have an important role to play in the design and effective and efficient implementation of industrial policy.

4.1. Authorities as competition advisor

A first way in which competition authorities can contribute to making industrial policy more pro-competitive is through its competition advocacy efforts. Competition authorities should continue to advocate for competitive markets and identify genuine market failures, for instance by conducting market studies.

Moreover, actively involving competition authorities in the design of industrial policy could drastically improve its efficacy. Their experience in using economic analysis, tools and evidence in assessing market structures, dynamics and outcomes, including anti-competitive effects and potential (in)efficiencies, can be extremely valuable when implementing industrial policy. They can provide advice to government bodies developing industrial policy on different aspects:

- Help identify where industrial policy may have the largest potential. Competition authorities, where possible together with technical government agencies, can identify different scenarios, assessing potential market failures and market distortions introduced by the industrial policy instruments.
- Advise on ways for the government to co-operate with the private sector. Contemporary industrial policy increasingly assumes intimate co-ordination between stakeholders, namely (i) between different government agencies, (ii) between government agencies and the private sector and (iii) amongst private sector firms (Akileswaran and Sandhu, 2024^[37]). This carves out a clear role for competition authorities, namely to help design or assess forms of co-operation with and amongst firms or associations in the private sector, and avoid that well-intended initiatives become conduits for collusion. As industrial policies may encourage collaboration among companies, for instance for research or production, it requires careful analysis and oversight to achieve a balance between competition and co-operation, ensuring that co-operation that may help overcome market failures do not spill over into anti-competitive conduct that is detrimental to welfare.
- Help design pro-competitive industrial policy strategies, especially for those instruments that are provided on a competitive basis (e.g. public procurement, loans, grants or equity financing) to ensure competitive neutrality. This ensures that if support is extended to particular enterprises, it is done as the outcome of a competitive and transparent process in which the criteria for support are clearly specified.

Such advice by competition authorities can be provided on an ad-hoc basis (upon request) but would ideally consist of a more formal or frequent engagement with the respective agencies responsible for developing industrial policy. Within such collaboration, it could also (help) collect empirical evidence on what industrial policies are effective from a pro-competitive perspective.

In its advisory role as competition expert, the authority can provide transparency about trade-offs in different scenarios from a pure competition-based viewpoint, i.e. focusing on market failures and assessing industrial policy from an economic efficiency perspective. This allows government agencies, responsible for the design of industrial policy, to make more informed decisions by considering the trade-offs between expected competition-based outcomes and other policy objectives. This is perhaps especially relevant since efficiency as overarching objective for economic policy is not always without criticism and this criticism has intensified as a result of some of the contemporary issues discussed in section 2.2. Opponents of efficiency as guiding principle consider this objective to be too narrow to tackle some of the large societal challenges.⁶⁷ Especially in the case of unequal wealth distribution, or when government interventions are expected to pay dividends only relatively far in the future, a “wider” definition of efficiency could be warranted than normally employed by competition authorities. This could take into account a longer timeframe or put more weight on non-economic values or criteria. While “wearing the hat” of a competition enforcer, the analytical framework or assessment framework is much tighter (ultimately linked to legal principles and case law).

Moreover, an assessment framework, or toolkit, could be developed to evaluate the impact of industrial policy instruments and strategies on market efficiency. Such framework, which could build on existing experience assessing state aid, could support ex-post and ex-ante assessments of types of industrial policy and enables governments to be transparent on the trade-offs involved.

4.2. Ensuring competitive markets through enforcement

A second way in which competition authorities should (continue to) support a pro-competitive industrial policy is through competition enforcement to ensure that markets remain as competitive as possible.

In many ways, this implies “business as usual” (a competition authority is mandated and demanded to enforce its law where needed anyway). However, through prioritisation of cases or industries, certain industrial policies can be more actively supported. Moreover, for some authorities, certain new tools may allow them to support industrial policy in a way that they were not able to before. Examples of such new powers are the foreign subsidy regulation (discussed in section 3.2.1) and pro-competitive intervention powers.

The pro-competitive intervention powers refer to recently introduced powers in some jurisdictions that allow the competition authority to take certain measures, even absent a competition infringement (OECD, 2023, pp. 18-19^[73]).⁶⁸ Although relatively few authorities possess such legal powers, an increasing number is proposing such powers (Baldwin, 2024^[85]). When focusing on a certain industry, for instance digital markets, these powers could help achieve certain industrial policy objectives.

⁶⁷ For instance, Foroohar (2023^[102]) contrasts efficiency and resiliency, arguing that efficiency leads to short-sighted goals (low costs and high profits) and “dangerous fragility”. Deaton (2024^[100]) argues that efficiency is important, but that we value it over other ends, and that social justice became subservient to markets. Caffarra and Lane (2024^[53]) argue that efficiency should no longer be the ‘north star’ that we need pursuing. They claim that efficiency criteria are empirically incomplete because it is difficult to prove something is ‘efficiency enhancing’ in the case of policies with long gestation periods and whose benefits are borne in the future.

⁶⁸ The necessity to implement pro-competitive measure results from a market study – a traditional tool used extensively by nearly all authorities to follow complex, problematic, important and/or rapidly developing markets – that has signalled an imperfect market structure.

5 Conclusion

The social, economic, and political environment has changed profoundly in the past two decades. New and urgent challenges have led governments to take a much more active approach, resulting in a resurgence of government intervention, including industrial policy, with consequences and implications for competition dynamics and competition policy. The reasoning is that by adopting strategic interventions tailored to their specific economic contexts and development priorities, governments may be able to effectively address pressing challenges, seize emerging opportunities, and foster inclusive and resilient industries that benefit society as a whole. As such, the resurgence of industrial policy in many market economies represents a departure from the *laissez-faire* approach of the past decades towards a more proactive and strategic role for governments in shaping the future of industries and economies. Dani Rodrik's adage "*Don't ask why, ask how*" seems more relevant than ever.

Competition policy and its enforcement agencies are but one component in a broad number of policy tools that help shape private sector activities and ensure their alignment with public policy objectives. However, competition principles should be a cornerstone of carefully designed industrial policy measures, and in this sense, competition authorities can have an important role to play in designing industrial policy to ensure competition-friendly industrial policies. Whether it relates to fixing market failures or creating markets, it is crucial for industrial policy to harness the power of market forces in the pursuit of social and political goals.

So far, the roles of competition authorities have often been keeping markets competitive by correcting anti-competitive conduct or (not) blocking mergers, as well as assessing state aid in certain jurisdictions. And given the importance of competitive markets for the effectiveness of industrial policy, this remains crucially important. Moreover, there are some opportunities to update competition enforcement with new economic understanding and evidence, so that competition and industrial policies become even more complementary, such as how to deal with efficiencies and taking due account of dynamic and future competition.

However, competition authorities, as experts in analysing market structures, market dynamics and market behaviour, can play an even bigger role by advising governments and policymakers on how to ensure that competition principles are followed when designing industrial policy. They could provide input, for instance, on the choice of the industrial policy instruments, their design, and what conditionalities or guardrails are desirable. This can help create or improve competition, or at a minimum ensure that industrial policy initiatives do not unnecessarily harm competition. Moreover, making explicit market failures and possible distortions allows government agencies responsible for the design of industrial policy to make more informed decisions by considering the trade-offs between expected competition-based outcomes and other policy objectives. In this role, competition authorities can provide an idea of the indirect costs of industrial policy choices by distorting competition. Not assuming this role may risk that the resurgence of industrial policy around the globe, in endless strategies, shapes and forms, leads to inefficient, suboptimal and welfare reducing outcomes.

A framework to design industrial policy could be guided by principles to ensure that economic interventions support a competitive and efficient market environment. This makes industrial policy more effective in itself, but may also prevent competition issues from occurring or worsening in the future. Some key competition principles to consider when formulating industrial policy include:

1. **Focus on tackling market failures.** Implement industrial policies where and when market failures have been clearly identified. Choose the adequate instrument to address that market failure, while ensuring that its impact does not unduly decrease competition.
2. **Identify potential market distortions created by industrial policy.** Carefully assess how policy instruments could create or exacerbate market distortions, such as erecting or increasing barriers to entry or providing undue advantages for specific firms. Both potential domestic and international distortions should be identified.
3. **Focus on market openness.** Avoid unnecessary restrictions on market entry. Facilitate competition by actively analysing potential barriers and helping to minimise barriers that hinder new entrants from participating in the market.
4. **Ensure competitive neutrality.** Ensure a level playing field for all market participants by adopting and maintaining neutral market rules. Avoid selective and discriminatory practices that could provide undue advantages to specific firms or industries.
5. **Avoid facilitating anti-competitive practices.** Avoid facilitating practices that may distort competition, for instance by facilitating close collaboration between competitors on important competition parameters or abuses of dominant positions.
6. **Include exit strategies/sunset clauses:** Government support should in principle be temporary and industrial policy should include an exit strategy on how and when to end or phase out its support. Moreover, industrial policy should be evaluated and assessed on a frequent basis.
7. **Design conditionalities and guardrails that incentivise competition.** Carefully designed conditionalities and guardrails can encourage broader participation, foster a more dynamic business environment, and increase competition.

Building on the aforementioned key competition principles, it may be beneficial to develop a more detailed assessment framework, or toolkit, on how to evaluate the impact of industrial policy instruments and strategies on market efficiency. Such framework could support ex-post and ex-ante assessments of types of industrial policy and enables governments to be transparent on trade-offs involved.

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