



# TO THE COMMISSIONER RESPONSIBLE FOR SINGLE MARKET AND INDUSTRY

\* A well-functioning single market with enforced competition rules has traditionally been considered the best industrial policy the EU could choose. But global developments, related especially to the emergence of big digital technology firms from China and the United States, have left European companies behind.

You will need to tackle the horizontal challenge of reinforcing single market policy areas, especially for services and public procurement, while taking on the vertical challenge of identifying key targets on which to concentrate, being careful to avoid picking losers.

In choosing targets for support, it is better to support many initial endeavours, addressing the difficulties of emerging networks. You should also work to coordinate national industrial development programmes, and regional smart specialisation initiatives.

- \* HORIZONTAL CONDITIONS
- \* CHOOSING PLATFORMS
- \* COORDINATION

\*GLOBAL  
COMPETITION

You take over a file that is critical for Europe's economic future. A well-functioning single market with enforced competition rules has traditionally been considered the best industrial policy the EU could choose. Specific interventions supporting champion firms have been considered as distorting competition, and not effective in promoting growth and jobs. But global developments, related especially to the emergence of big digital technology firms from China and the United States, have left European companies behind. To restore and secure the EU's position in a new global competitive environment, you will have to ask if we can still rely on an industrial policy focused on the single market and competition policy, or if we need a new version of industrial policy. Before we make some recommendations on what this new version might look like, we first describe the state of affairs and the challenges you inherit.

\* DIGITAL  
TECHNOLOGIES

## 1 STATE OF AFFAIRS

The European Union continues to lag behind in terms of technological developments compared to the US and China, in particular with respect to digital technologies. At the same time, there is an increasing dispersion of productivity across firms. Some 'superstar' firms are pushing forward the frontier of technological evolution, and are star performers in productivity growth (David *et al*, 2017; Van Reenen, 2018). These superstar firms are typically bigger, more innovative and have higher rates of digital technology adoption (Bessen, 2017). Laggard firms, often small and medium-sized (SMEs), have a hard time to keep up, falling further behind on productivity growth. With superstar firms increasingly dominant, many industries are becoming 'winner-takes-all' and are experiencing increasing concentration. This is the case particularly for sectors in which digital technologies, especially digital services, are developed or intensely adopted. In these sectors, the leaders are typically American or Chinese (Calligaris *et al*, 2018). As far as the EU is concerned, there is evidence of a somewhat smaller concentration of market power in superstar firms compared to the US (Gutiérrez and Philippon, 2018). For some, this is evidence that EU competition policy works better than its counterpart in the US;

\* SUPERSTAR  
FIRMS

\* ARTIFICIAL  
INTELLIGENCE

another aspect, however, might be down to the EU largely lacking leading firms at the technology frontier, especially in digital technologies (Veugelers, 2018).

While the EU has fallen behind in the digital technologies and services race, which is currently dominated by US or Chinese companies including Amazon, Qualcomm, Google, Huawei and Alibaba, the question is whether the EU will be able to take leading positions in the new races to come. These will be centred on the integration of new digital technologies, including advanced digital services, the internet of things (IoT) and artificial intelligence (AI), into manufacturing and services, with the emergence of network-based production processes that will profoundly reshape traditional value chains. For example, car manufacturing, a pivotal sector for the EU economy, faces the shift from the internal combustion engine to electric propulsion (Fredriksson *et al*, 2018), with the required technological advancements to make this happen, most notably better battery technology. But car manufacturing also faces the development of a whole series of new digital services (smart electricity grids, personalised entertainment systems, smart mobility), which are all part of a network centred on the physical ‘platform’ represented by the car. These services are based on the evolution of IoT and AI technologies, the development of which in turn depends on the setup of an ecosystem adequate for their emergence. The Galileo Global Navigation Satellite System, to be completed by 2020, will be a physical platform via which advanced digital services can be provided, but its commercial development at full potential critically hinges on the ability of EU firms to develop those services.

\* DIGITAL  
SERVICES

If European firms are unable to develop and integrate new digital-technology intensive services into the evolving paradigm of production, they will not win the races of the future, even in those sectors where they are currently still leading. It is concerning, for example, that the EU in 2018 was responsible for only a 10 percent share of global digital services research and development, and an 8 percent share of global digital services sales, compared to 73 percent and 57 percent, respectively, for the US (digital services refers to software and computer services). Europe’s shares of AI

and digital data transfer patents from 2010 to 2015 were only 12 percent and 7 percent respectively<sup>1</sup>.

In this context, you should take steps to redesign EU industrial policy to avoid repeating past failures and falling further behind.

## 2 CHALLENGES

Single market regulation for products and services is a major instrument for EU industrial policy. The integrated EU market, in which fair and open competition is guaranteed, remains the world's largest and as such offers unparalleled economies of scale in the development of new production processes that, by their nature, are characterised by high fixed entry costs. However, the single market is still incomplete, particularly in services, including services that are pivotal for formation of some of the new production platforms. To be effective, the single market should not be confined to product and services markets, but should extend to integrated capital and labour markets, to allow EU firms unimpeded access to skills and risk capital for their innovative efforts. These important complementary single market policy areas are, however, outside your portfolio and will require coordination with other commissioners, a challenge your predecessors all struggled with. Beyond the need to further integrate the single market, there is also the need to protect it in its current form against the forces – including Brexit and populism – that would move it into reverse gear.

In addition to the horizontal challenge of reinforcing single market policy areas, there is the vertical challenge of identification of key targets on which to concentrate. There is the ever-present risk of picking 'losers' or those that need permanent support, or those that did not need the support in the first place. There is also a risk of capture and rent-seeking, especially when selection processes are not transparent and the rules of selection are not clear.

Another challenge you face in developing an integrated industrial policy at the EU level is the current proliferation of industrial-policy initiatives at national or even regional level across the EU. For example, Germany, France and Italy have all developed their own versions of 'Industry 4.0' programmes – programmes aimed at supporting the adoption by companies of state-of-the-art,

\* INDUSTRIAL  
POLICY

\* IDENTIFYING  
TARGETS

\* NATIONAL  
INITIATIVES

\* SMART  
SPECIALISATION

\* CHINA AND  
THE US

digital-intensive technologies. The German government is coordinating some of the technology platforms developed by large German multinationals<sup>2</sup>. The French government has identified a number of key technologies on which to focus public and private investment, among them aerospace and car batteries<sup>3</sup>. The Italian government has created a tax credit scheme to stimulate investment in ICT<sup>4</sup>. Moreover, EU regions are developing ‘smart specialisation’ strategies, in particular within less developed EU regions and countries, an action explicitly stimulated by the EU through its regional policy framework (RIS3)<sup>5</sup>. Coordination of all the national and regional ‘Industry 4.0’ industrial policy initiatives will be another key challenge for you. In particular, it is important to develop common standards across national boundaries for the communication and machine-to-machine integration protocols required for the development of new technologies, while avoiding duplicating initiatives. Failing to coordinate would hamper the full exploitation of the size of the EU market and the related economies of scale: these are key for EU firms to establish sustainable positions from which they can compete on a global scale, in particular in those winner-take-all settings where size is critical.

Another challenge is related to the external dimension of the new industrial policy, taking into account the tough global competition and the global configurations of technology platforms and value chains. The rise of Chinese state-controlled or sponsored business and policy models, and the recent attitude of the US government, which has become more inclined to protectionist intervention aimed at nurturing and protecting local champions, both clearly challenge EU companies that must compete fairly in the global arena, both between and within platforms. You must maintain an open perspective in this context, in terms of developments both inside and outside of the EU, while defending a fair level playing field for EU companies.

### 3 RECOMMENDATIONS

Before reading our recommendations, it is worth recalling some of the key technological races that will shape the near future. These



*Digital technologies, big data and services are being continuously improved, and will be the basis for more and more complex arrays of activities and offerings*

will revolve around a number of platforms, powered through digital technologies (such as AI), big data and services, which are being continuously improved, and on which a more and more complex array of activities and offerings will be developed. Among the most prominent examples of such platforms are connected cars and connected products and devices (IoT).

While the EU in principle could be well placed, thanks to its strong industrial tradition, EU success still requires, among other factors:

\* BOOSTING  
INNOVATION

- A boosting of R&D and innovation efforts, both at the basic and applied level, with a particular focus on applications based on digital technologies;
- As data is essential as an input for these platforms, entry barriers should be reduced through adequate forms of data access and sharing, and through the development of common communication protocols. Clearly, as the ongoing debate around the EU general data protection regulation (GDPR, (EU) 2016/679) has shown, an adequate balance has to be found between economic opportunities and privacy;
- Aiming at the widespread adoption of the newly developed digital technologies and services by firms, especially SMEs;

\* SKILLS

- Developing an adequate pool of skills in the workforce, to match the required capacities associated with these new digital technologies;
- Channelling sufficient financial resources available via capital markets to the large fixed and risky technology investments needed, especially for start-ups and scale-ups;

- Refining regulatory policies in the area of energy and environment to make them suitable to the emerging needs of new production processes<sup>6</sup>.

This non-exhaustive list makes it clear that you will need to navigate between different policy instruments, areas and levels. What follows are recommendations on how to do this.

### **Find a good mix of horizontal and vertical approaches to industrial policymaking at EU level**

The pure horizontal approach of creating general framework conditions (the approach more or less used by your predecessors, using the single market and competition as EU instruments), has failed to boost adequately the EU's competitiveness and has failed to put the EU at the frontier of the digital transformation. However, taking a pure vertical approach involving picking specific technologies, sectors or champion firms, and throwing money at them can also be ineffective. Both approaches will have to be pursued as complements.

The vertical approach allows a more specific targeting of those activities that are strategic for the EU's long-term competitiveness and welfare, in which the EU has unique sustainable capabilities to develop and capture value-added, and where policy interventions are needed to address missing framework conditions. Meanwhile, the horizontal approach addresses those missing framework conditions that are non-specific to the chosen targets. A solid horizontal policy base will reduce the costs of picking the wrong targets or missing the right targets. For example, should the EU choose electric cars or hydrogen or both? Framework conditions also enable the blurring of boundaries across sectors and technologies to be better dealt with. For example, in the case of electric mobility, should the EU target all of, or only some of, car manufacturing, car components such as batteries, complementary infrastructure such as charging stations, or mobility sharing services? Adequate framework conditions would mean market forces can easily compensate should the EU priorities not deliver, miss relevant targets or be shown to have been focused on the wrong or too narrowly defined targets.

\* STRATEGIC  
TARGETING

\* FRAMEWORK  
CONDITIONS



*You should seek to ensure an adequate ecosystem for the birth and development of technologically advanced production platforms*

### **Improving the horizontal approach: deepening the single market**

The aim of the horizontal approach is to ensure an adequate ecosystem for the birth and development of technologically advanced production platforms. This requires at EU level an extended combined single market and competition approach.

You should aim to:

- Complete the single market for non-digital services (as diverse as retail, transport, hotels and banks) and eliminate the market fragmentation still existing: the enlarged market and the increased competition stemming from a truly integrated single market for various services would incentivise the development of new offerings based on technology platforms making use of digital products and services.
- Complete the single market for public services/public procurement: a large, open and competitive public procurement process would ensure access to more efficient and effective public services; it would also create a larger enhanced market for EU firms supplying to public services.

Outside your direct policy competence, with instruments in the hands of colleague commissioners, it is necessary to:

- Complete the digital single market by creating a large, open and competitive single market for digital products and services: increased access to digital technologies and data for business-to-business services will create a positive feedback loop for new technology platforms that make use of digital products and services<sup>7</sup>;
- Complete the integration of EU financial markets, especially the capital market segments most relevant for the financing of the research, innovation and digital investments needed to support the development of new technology platforms;

\* COMPLETING THE SINGLE MARKET

## \*DIGITAL SKILLS

- Create a single market for skills, ie make it easier for firms to access skills, especially digital skills, across national borders. This requires more work on mutual recognition of diplomas, and the introduction of a European professional card to reduce intra-EU mobility costs. It also requires a recalibration of the European Social Fund for the 2021-27 EU budget, broadening support for specific national initiatives on digital education and on the training and retraining of workers;

## \*COMPETITION ENFORCEMENT

- Implement transparent enforcement of competition rules; competition enforcement should be up to date in terms of detecting and redressing harmful abuse in the new digitally powered platforms, without jeopardising any static and dynamic efficiencies from their large size.

For such a horizontal EU industrial policy, effective coordination between your instruments and those of other commissioners (particularly those responsible for digital services, competition, research,) is needed. As you hold the pivotal single market portfolio, you should play a driving role in this coordination process.

### **Addressing the vertical challenge: identification/targeting of 'champion platforms'**

Extending the single market to the previously identified policy areas will allow the creation of relevant framework conditions in which market forces can efficiently identify winning platforms.

## \*PLATFORMS

But on top of this, you will also need to take a vertical approach that targets specific platforms. You should be very explicit on the criteria used to select specific targets. Platforms can be given favourable treatment to help them maintain or build sustainable positions on world markets, positions that they, without government support, would not be able to achieve because of market failure (for example, EU firms might be too small or young to reach critical scale and overcome barriers to entry) or unfair competition (rival firms supported by their governments).

To avoid policy-choice errors, it is better to support many initial endeavours, addressing the difficulties of emerging networks, rather than a few large permanently funded projects. Also, targets should be chosen through a process of calls and competitive

selection of bottom-up proposals, rather than the selection of a few targets through a top-down, ill-motivated political selection process. Finally, it is important that the selection process does not result in protection for incumbents. The process should be fully open to new innovative approaches.

Once targets have been identified, the next step is identify the missing critical conditions for developing activities within the selected targets, and the policy actions that are needed to address these, above and beyond a pure horizontal approach. Clearly, the policies in such a vertical approach are not so much about providing a pot of public money for the selected winners, but more about developing a target-specific horizontal policy, ie creating framework conditions/removing barriers for the development of activities in the selected target area.

\*CLIMATE GOALS

High priorities as target areas should be those aimed at addressing climate change, one of the most pressing challenges for European society. Empowered with the newest (digital) technologies, these industrial policy target areas can contribute to reaching the EU's climate goals, while carving out new competitive strengths for EU firms on global markets. But these target areas could be vulnerable to market failures. Because of this, a more biting carbon price instrument should be part of the industrial policy toolbox. Although it is not your portfolio, you should still push for it, because without a proper price on carbon, your instruments will be much less effective.

### **Addressing the coordination challenge**

To coordinate the various 'Industry 4.0' programmes at national and regional level, the EU can leverage the national reform programmes developed within the European Semester and the regional RIS3 smart specialisation programme: the broad EU industrial policy framework should become embedded in the member state national reform programmes and the regions' smart specialisation programmes. Regular evaluation of these programmes by the Commission should be high on your agenda, as it will create the space for coordination of national industrial policy initiatives.

\*NATIONAL  
REFORM  
PROGRAMMES

Moreover, in defining the new Community Support Framework for the use of Structural Funds in the 2021-27 budget period,

specific references should be made to policy actions centred on the development of the identified technology platforms at EU level, which would better link the national and regional operational programmes to the overall EU industrial policy approach, and would naturally improve coordination. Specifically, it would be important to reorient the competitiveness objective of the European Regional Development Fund (implemented by already developed EU regions) towards the EU's industrial policy goals. Finally, it would also be important to target part of the funds traditionally reserved to cross-border regional initiatives to the development of cross-border industrial policy actions. All this will require close coordination with your colleague responsible for regional policy.

### **External issues**

The process of selection of the key technology platforms on which the EU should concentrate its policy measures should not generate protectionist pitfalls, ie it should not lead to the protection of incumbents from the creative-destruction process associated with the new global situation. Rather, it should empower EU firms to be global winners.

### \*OPENNESS

In order to maximise the creation of value added within the single market, the EU market should also remain open to the import of frontier technologies and best practices, wherever they are initially developed. For this, it is important to continue the work at the World Trade Organisation on trade-facilitation measures.

Adequate opening has to be maintained also for foreign investors to access the single market, clearly within the boundaries of the European strategic interests, as defined by the new EU framework for the screening of foreign direct investments, which entered into force in April 2019<sup>8</sup>.

### **Addressing the lack of an evidence and effects-based industrial policy strategy**

In order to implement effectively a coordinated industrial policy strategy, which is well balanced between horizontal and vertical approaches, you should move towards an evidence/effects-based approach. You should invest in building a sufficiently large

monitoring and evaluation unit within your directorate-general that will provide you with the evidence you need to guide your policy choices on targets and instruments, and that can coordinate with other such units in other directorates-general. In assessing effects, a set of key performance indicators, differentiated in terms of the platforms around which the policy is going to be organised, need to be identified at the time of selection of the target. Their (total or partial) fulfilment should be used as part of *ex-post* monitoring and evaluation. Examples of these key performance indicators could include the percentage of worldwide electric car batteries that are EU-made by a given year, the EU's share of connected machinery in industry worldwide, the EU's share of worldwide R&D in key platforms, or the number of workers whose retraining in key digital-related activities has been supported by the European Social Fund by country.

## NOTES

- 1 Patent data refers to share of patent families file at the five major patent offices (European Patent Office, US, Japan, China and Korea).
- 2 See <https://www.bmbf.de/en/the-new-high-tech-strategy-2322.html>.
- 3 See [https://www.economie.gouv.fr/files/nouvelle\\_france\\_industrielle\\_english.pdf](https://www.economie.gouv.fr/files/nouvelle_france_industrielle_english.pdf).
- 4 See for Germany; for France [https://www.economie.gouv.fr/files/nouvelle\\_france\\_industrielle\\_english.pdf](https://www.economie.gouv.fr/files/nouvelle_france_industrielle_english.pdf); for Italy <https://www.mise.gov.it/index.php/it/industria40>
- 5 See <http://s3platform.jrc.ec.europa.eu/what-is-smart-specialisation->.
- 6 For example, in the case of the electric car platform, the EU would need to develop multiple, high-powered recharging stations throughout its territory compatible with electricity grids, while new types of waste (eg used batteries) will need to be treated.
- 7 See the memo in this volume to the commissioner responsible for digital services, content and networks.
- 8 See <http://trade.ec.europa.eu/doclib/press/index.cfm?id=2006>.

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