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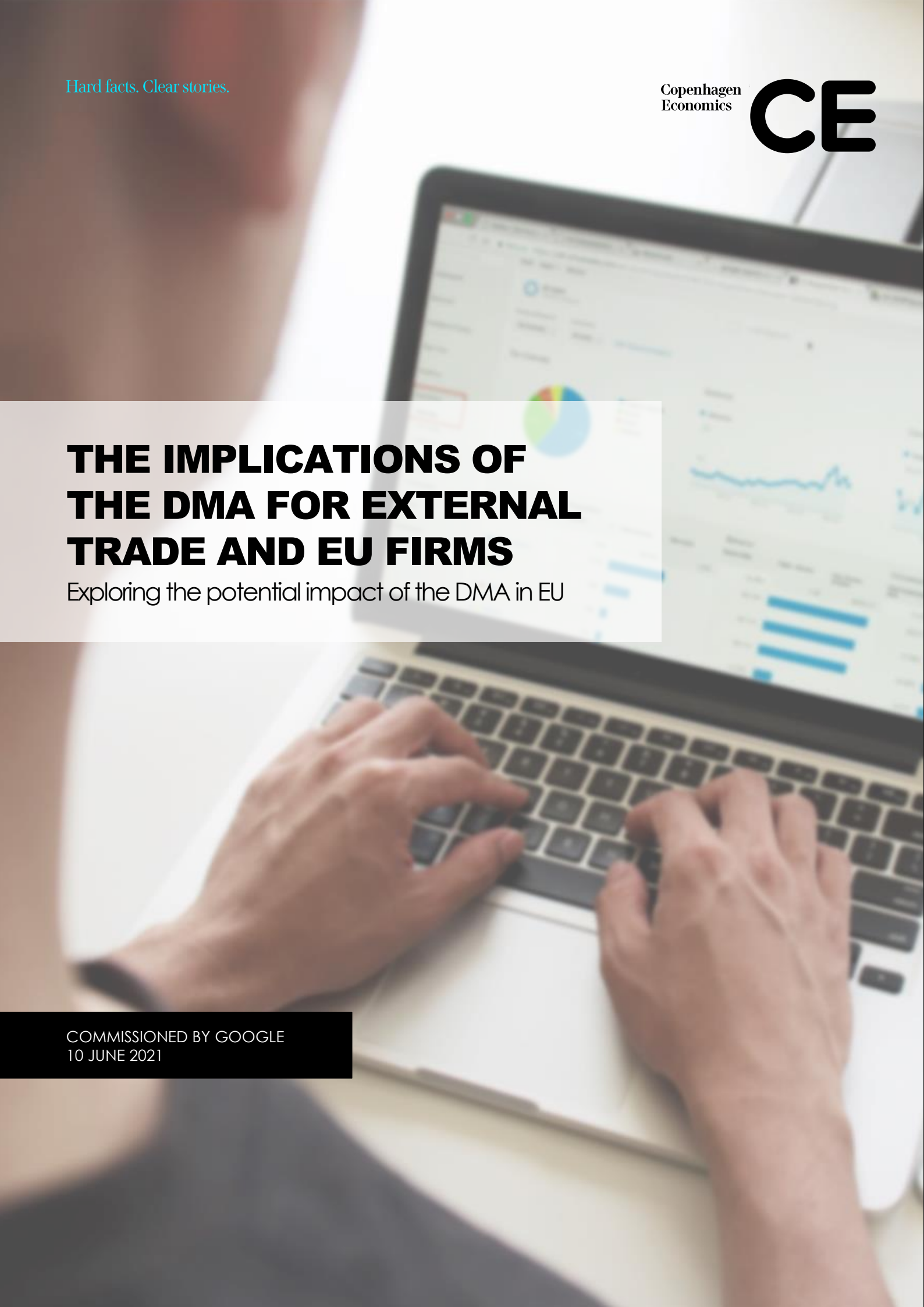

THE IMPLICATIONS OF THE DMA FOR EXTERNAL TRADE AND EU FIRMS

Exploring the potential impact of the DMA in EU

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AUTHORS

Sigurd Næss-Schmidt
Bruno Basalisco
Signe Rølmer
Katrine Poulsgaard
Morten May Hansen
Laurids Leo Münier
Laura Virtanen
Jasper Lutz
Signe Bech

PREFACE

The digital economy has become an increasingly important part of the global economy as well as the EU economy. Online platforms, as intermediators of users (C2C, B2C or B2B) have become a part of everyday life for most Europeans, and even more so during the COVID 19-pandemic.

Since 2014, the EU Commission, realising the increasing role of the digital economy, has taken steps in the direction of identifying and introducing regulation for a so-called 'data agile economy'. The proposal for the Digital Market Act (DMA) is one of the newest pieces of EU legislation to address the role of so called 'gatekeepers'. The proposal's current form sets out to introduce a series of 18 obligations and prohibitions for gatekeepers.

The EU Commission's Impact Assessment of the DMA concludes that compliance costs constitute the main cost of the proposal. However, the assessment does not include the implication for the users of platform services offered by gatekeepers: The costs borne by EU businesses and SME's who rely on platform services to run their business and to export. Yet, the DMA proposal holds several provisions likely to reduce the functionalities and thereby the quality of platform services, impacting the value generated from their use. This obstructs EU businesses' ability to fully exploit the benefits of other business models that have their origin, main activities, and operations outside the EU.

Google Inc. has commissioned Copenhagen Economics to investigate the likely effects of the DMA and address two issues in particular:

- Document the benefits that the EU draws from today's international trade system
- Investigate whether the DMA proposal in its current form puts some of these benefits at risk

A brief note on consultancy research: As is standard in our field of professional services, research is designed so that (i) the client chooses the research question; (ii) we analyse and address the question to the best of our knowledge; (iii) findings and conclusions are our own. Professional services independence is ensured via a diversified portfolio of business, spanning across public sector and private clients across industries. For further information, see www.copenhageneconomics.com. We remain available for and appreciate any questions or comments.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF BOXES

EXECUTIVE SUMMARY

EU benefits from global trade based on comparative advantage

The EU's external trade has a large impact on the EU economy. In 2019, extra-EU exports reached almost EUR 3,200 billion. The largest trading partner was the US, accounting for a share of 18 % corresponding to EUR 589 billion. Economic contributions from subsidiaries established abroad can also be cemented as substantial, amounting to EUR 26 and 92 billion for the EU and US subsidiaries established in the other region, respectively. Further, trade impacts consumer welfare and imply wider economic effects. Looking at trade in general in the EU, an estimated 36 million jobs are supported by exports, which enjoy a 12% wage premium compared to jobs not supported by trade.[1] Another 16 million jobs in the EU are supported by foreign investments.[2]

Trade patterns are the result of a wide set of drivers, such as comparative advantages, regulation, ease of doing business, indirect subsidies and trade policies. The nature of the EU's comparative advantage in external trade will thus inform trade patterns. For the EU, chemicals and pharmaceuticals, machinery and equipment, and car manufacturing sectors account for approximately 29% of all extra-EU exports[3]. These industries are all characterised by a high level of R&D intensity and the increasing role of intangible assets. The US are net exporters of Information and Communication Technology (ICT) – a sector sharing similar characteristics - US firms accounting for 55% of global sales among the world's largest R&D companies. On both the EU and US side, trade flows indicate a comparative advantage within R&D intensive industries - an area of increasing economic importance with growth rates for intangible fixed assets as a share of gross fixed capital formation of 5-6 % over the last 20 years.

The EU benefits *twice* from this trading pattern:

- It allows the EU to expand sales on a global level in a number of industries, notably in the pharmaceutical, machinery, and automotive industries, where the ability to scale production on a global level is essential to be in the lead and leverage the inherent high fixed costs of R&D investments
- At the same time, it gives EU firms the ability to use digital tools and platform services developed by the US and other global firms, such as social networks or cloud computing services. Almost half of EU businesses use social networks to reach targeted groups of consumers at a low cost, while 36% use cloud computing to ensure sufficient capacity and secure storage of company data.

Trading gains at risk

The functioning of the global trading system and the ability to leverage comparative advantage is ultimately based on a mutual understanding of the benefits it provides to all

1 DG Trade Chief Economist note (2018)- "How important are EU exports for jobs in the EU?"
2 European Commission (2019) "Commission staff working document on foreign direct investment in the EU"
3 Extra-EU imports and exports refer to trade between EU countries and the rest of the world as opposed to intra-EU trade

partners. It is essential to be able to export to foreign markets without discrimination vis-à-vis domestic competitors, but also to have access to high quality/low priced imported products imported from other areas. Nonetheless, international trade policies are often based on the practice that the different parties only provide access to their own domestic markets under the condition that their trading partners also offer similar access to their markets: Reciprocity can be an important measure in many bilateral agreements.

Given the nature of global trade today, where traditional trade barriers such as formal tariffs play a steadily declining role, non-discriminatory access to foreign markets is driven by factors such as mutual recognition of standards, equal treatment of comparable situations and competitive neutrality. Indeed, a recent study showed that removing NTBs could amount to 10-22% of extra-EU exports to the US corresponding to a GDP impact of EUR 33-71 billion.

In this context, the current form of the DMA raises two kinds of risks to the EU external trade climate:

1 Some of the provisions of the DMA may in effect discriminate against firms that have their main residence or activity outside the EU
2 EU firms may face reduced productivity and competitiveness as the proposed DMA could impair some of the functionalities of digital platform services that create value for the users, thereby impacting intra- as well as extra EU trade

Risk 1: The potentially discriminatory nature of the DMA

The objective of the DMA is clear, namely, to foster competition and innovation by increasing the contestability and fairness of digital markets. However, the regulation appears to only target a narrow set of companies defined as 'gatekeepers' which are characterised by:

- Being a core platform service (CPS) operating at least one of eight pre-defined business models
- Having a strong, stable position in the market economically as well as intermediation wise (being an intermediary that connects many users)[4]

In this context, we have identified two potential problems.

Firstly, the in-scope business models are competing against out-of-scope business models in a number of areas. This is the case for services such as music and video sharing versus streaming, online ads versus stand-alone advertisements and online cloud services versus cloud-based professional services automation (PSA).

Secondly, when comparing the landscape of EU-based tech companies to tech companies based in other parts of the world, these thresholds de facto seem to hit disproportionately. Further, the global and group-wide characteristic of the thresholds on market cap implies that companies with a similar local position in e.g. EU may be treated differently depending on whether they have a global presence or are part of a larger conglomerate.
In short, in several cases neither the in-scope definitions nor the thresholds appear to be a result of careful market analysis with the objective to achieve a well targeted regulation. We observe that the apparent target of the regulation becomes US GAFAM along with a list of

4 As dictated by the DMA proposal, "Regulating digital gatekeepers" EPRS; European Commission

other potential gatekeepers, of which around two-thirds are US based compared to a baseline of around 40% US based companies in the tech sector as a whole.[5] This indicates that thresholds and scope provisions may conflict with basic EU and WTO principles of equal treatment in comparable situations, which could create trade frictions among the two regions which otherwise have aligned trade priorities.

Risk 2: EU export at risk

We find, based on the DMA Impact Assessment (IA), that the DMA provisions may put EU firms (CPS users) at a disadvantage compared to their global competitors. This will be the case insofar that the businesses within the scope of the DMA would be obliged to alter the currently favourable quality/price features for services supplied to Europe – while the same incentives do not exist elsewhere in the world.

As a consequence, we see a risk of lower quality for platform services, such as online search engines, online social network services, and cloud computing, to name a few, when supplied to EU firms. Platform services are important inputs for many EU businesses, as they enable scale economies, reduce transaction costs, and are intermediators of communication, for example by delivering messages from senders to receivers, by connecting content creators and audiences, or by facilitating matches between buyers and sellers.[6] Similar to the rest of the world, EU firms' productivity has benefited in past years from advances in the quality dimension of ICT inputs, including via the role of platform services.

Conclusion

The EU benefits immensely from a global trading system based on comparative advantages, as recognised in EU's trade policy agenda.

In this light, key trading partners are likely to critically review whether the high share of in scope non-domestic core platform service providers is an inevitable consequence of rules set out to promote competition and consumer choice. In particular, could the EU attain the same intended positive outcomes for consumers with potentially less discriminatory effects? Moreover, there are clearly indications that the current form of the DMA may impair the value of the services in scope, hampering productivity and competitiveness of EU businesses.

As a consequence, we recommend investigating in greater depth how the DMA proposal may impact the EU's external trade relations as well as the productivity of EU firms. In this study, we point to a few areas where such a further investigation could depart. We point in this direction notably to German and UK regulatory approaches to digital market regulation that combines ex ante conduct regulation with a responsibility to curtail or tailor the scope of regulatory obligations when "objective justifications" can be documented – for example when the socio-economic benefits associated with a type of conduct outweigh the expected costs.

5 Based on TBC definition of the Economic Sector Technology The Refinitiv Business Classification (2021)

6 Oxera (2021), p. 3, 17.

CHAPTER 1

EU BENEFITS FROM GLOBAL TRADE BASED ON COMPARATIVE ADVANTAGE

Trade between Member States and countries outside the EU has been an important driver of development and prosperity in the EU for many years.[7]

What ultimately drives benefits from trade is the ability for trade partners to specialise. Each trading party can do what it does relatively best –the areas in which it has a so-called comparative advantage – and buy from others the goods and services in which trading partners have specialised.

In this chapter, we start by looking at EU trade in a global context to understand its' comparative advantages (1.1) noting that other factors such as regulation and trade policies also play a role in the formation of trade patterns. We then turn to EU businesses and how they deploy digital tools and platforms as an input to their own business, basically leveraging the comparative advantages of others (1.2). We conclude by saying what is at stake with respect to the DMAs impact on the EU's external trade as a bridge to the following two chapters (1.3).

1.1 REALISING THE GLOBAL POTENTIAL OF EU COMPARATIVE ADVANTAGES

External trade has a large impact on the EU economy through the utilisation of comparative advantages, both as a result of direct trade with other regions, but also from the establishment of activities abroad. Trade enables countries to specialise in industries and products in which they have a comparative advantage, i.e. in which they are relatively more productive. Comparative advantages typically originate from the abundance of certain natural resources, factor endowments (capital and labour), economies of scale and technological development.[8] Without the existence of trade, countries would have to produce all products for local consumption self-sufficiently, which is sub-optimal from several perspectives.[9] Consumers benefit from both lower prices but also from a wider basket of goods and services.[10]

As a consequence, trade is a key driver of economic growth. Empirical estimates find that a one percentage point increase in the ratio of trade to GDP increases per capita income by as much as 1.5-2%.[11] Trade is a key determinant of domestic investment and foreign direct investment (FDI), which enable integration into global value chains, a natural manifestation of comparative advantage.

7 European Union (2021) "The history of the European Union"

8 Dollar (1993) "Technological differences as a source of comparative advantage", p. 431; Dosi & Tranchero (2019) "The role of comparative advantage, endowments and technology in structural transformation", p. 3; Costinot (2009). "An Elementary Theory of Comparative Advantage"

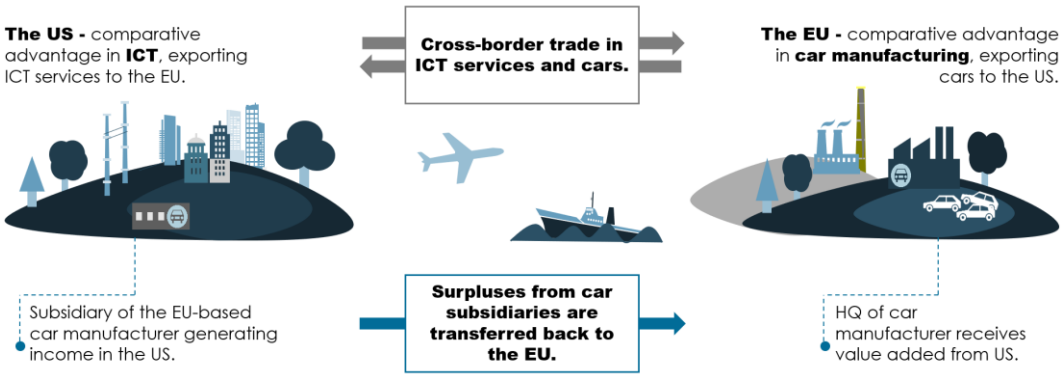
9 Costinot (2009). "An Elementary Theory of Comparative Advantage"

10 Cernat et al. (2018) "Consumer benefits from EU trade liberalization: How much did we save since the Uruguay round?", p. 2.

11 Frankel and Romer (1999). "Does trade cause economic growth?", p. 380

In addition to direct trade, which takes place via cross-border means,[12] a substantial part of international trade also takes place through FDI structures – i.e. from establishing a commercial presence abroad. This form of FDI is often of high economic value and is also based on the notion of comparative advantages. The value generated by subsidiaries abroad are not accounted for in traditional trade statistics, but as this form of FDI is largely enabled by trade, it is an important element in the valuation of trade relationships. See Figure 1 for an illustrative example of trade flows between the United States and the European Union.

Figure 1
Illustration of trade flows between the United States and the European Union



Note: Illustrative
Source: Copenhagen Economics

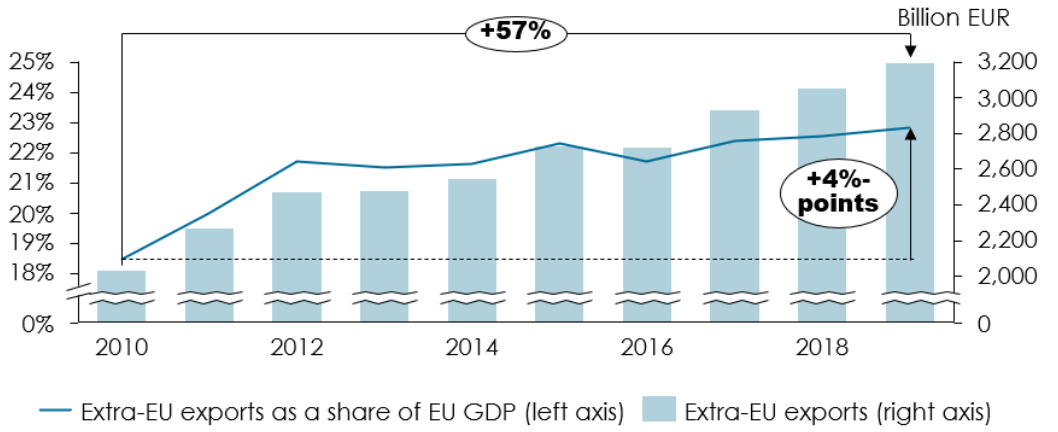
An essential contributor to the EU economy

Beyond the borders of the EU, the value of the EU's external trade is significant and increasing. Between the years 2010 and 2019, the EU's exports to the rest of the world grew by 57%, amounting to EUR 3,200 billion in 2019, see Figure 2. This corresponds to approximately 23% of total EU GDP. The stark growth in extra-EU exports suggests that the EU has become an increasingly competitive player on the global market.

Extra-EU exports have also played a role in EU's economic recovery during and post Covid-19. Although all EU countries, with the exception of Luxembourg, experienced a deep plunge in service exports during the spread of Covid-19 compared to pre-Covid-19 levels, many EU countries have experienced growth in goods exports, even with many countries imposing temporary restrictive measures on traded goods shortly following the outbreak of Covid-19. Extra-EU exports in sectors such as food & beverages, pharmaceuticals and chemicals, have been key sources of economic resilience for the EU during Covid-19.

[12] In other words, provided physically or digitally from the territorial presence of the supplier.

Figure 2
Extra-EU exports and export share of EU GDP, 2010-2019
Billion EUR and percent of EU total GDP

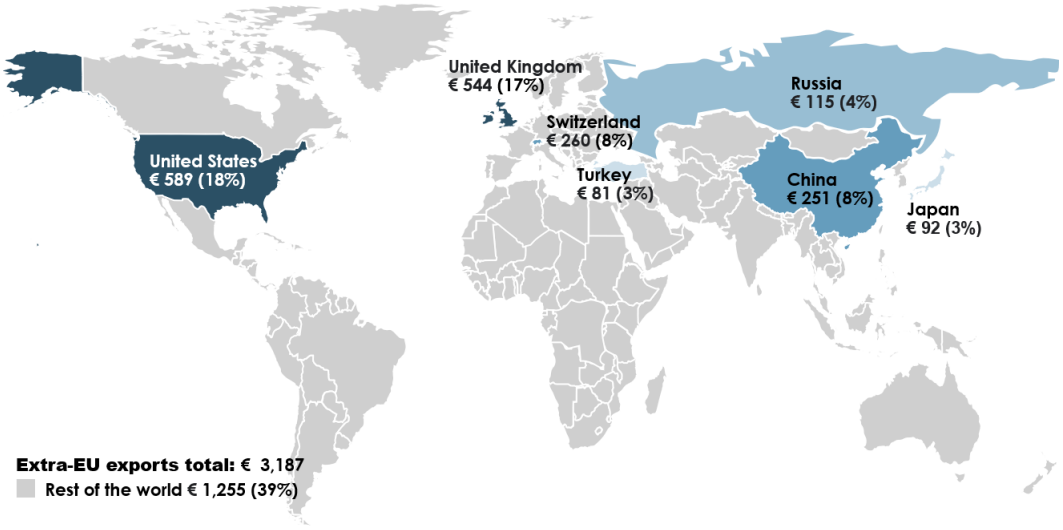


Note:
Source: Copenhagen Economics based on EUROSTAT international trade in services and international trade in goods data

The largest trading partner of the EU is the US, accounting for approximately 18% of extra-EU exports in 2019, equivalent to EUR 589 billion, see Figure 3. This relationship represents the largest and economically most significant trade and investment partnership in the world.[13] In addition to the US, other major trading partners of the EU include the United Kingdom, Switzerland and China, which together amount to approximately 33% of all extra-EU exports in the same year.

[13] European Commission (2021). "Trade Policy Review - An Open, Sustainable and Assertive Trade Policy", p. 8.

Figure 3
Destinations of extra-EU exports
Billion EUR (percent of total extra-EU exports)



Note: All trading partners accounting for less than 2.5% of total extra-EU exports not featured
Source: Copenhagen Economics based on EUROSTAT international trade in services and international trade in goods data

The economic contributions of the EU's subsidiaries established abroad can also be confirmed as a substantial contribution to EUs economy. When establishing a commercial presence abroad, e.g. through a locally-established affiliate or a subsidiary, multinational enterprises (MNEs) channel their comparative advantage to the location abroad, from where they generate economic value not just in the in the country of operations in the form of jobs but also in the headquarter country in the form of additional GNI. For instance, the value added generated by European MNEs in the US amounted to USD 723 billion in 2019, see Figure 4. Similarly, the US MNEs generated EUR 740 billion in value added through their operations in the EU in 2019[14]. The combined total exceeds the total GDP of many countries, signifying the sheer magnitude and importance of the transatlantic relationship.

[14] American Chamber of Commerce to the European Union (2021). "Transatlantic Economy 2021", p.19; see https://amcham.dk/content/2021/

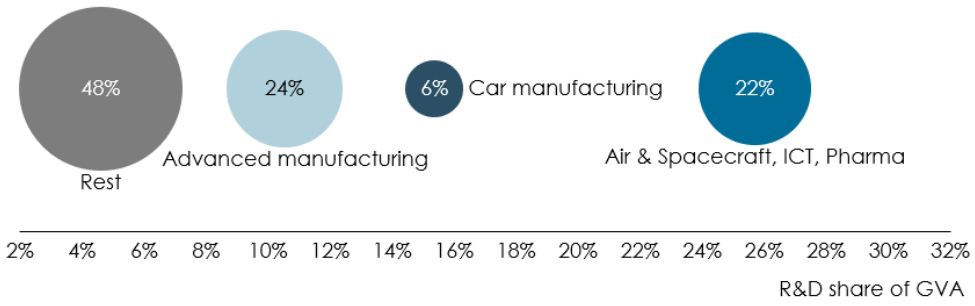
Figure 4
Value added generated by EU and US subsidiaries in the other region, 2019
Billion EUR

Source: Copenhagen Economics based American Chamber of Commerce to the European Union (2021)

Benefitting from comparative advantages

The EU-US trade is very much dominated by trade in R&D intensive products. The most R&D intensive sectors, including air and spacecraft manufacturing, ICT and pharmaceuticals, which have an average R&D share of industry GVA of 26%, account for 22% of all EU-US trade in 2019, see Figure 5. Advanced manufacturing and car manufacturing account for another 24% and 6% of total EU-US trade respectively, whereas the remaining less R&D intensive economy accounts for less than half of total EU-US trade.

Figure 5
EU-US trade in high R&D intensive industries, 2019
Percent of total trade (indicated by size) and R&D share of industry gross value added

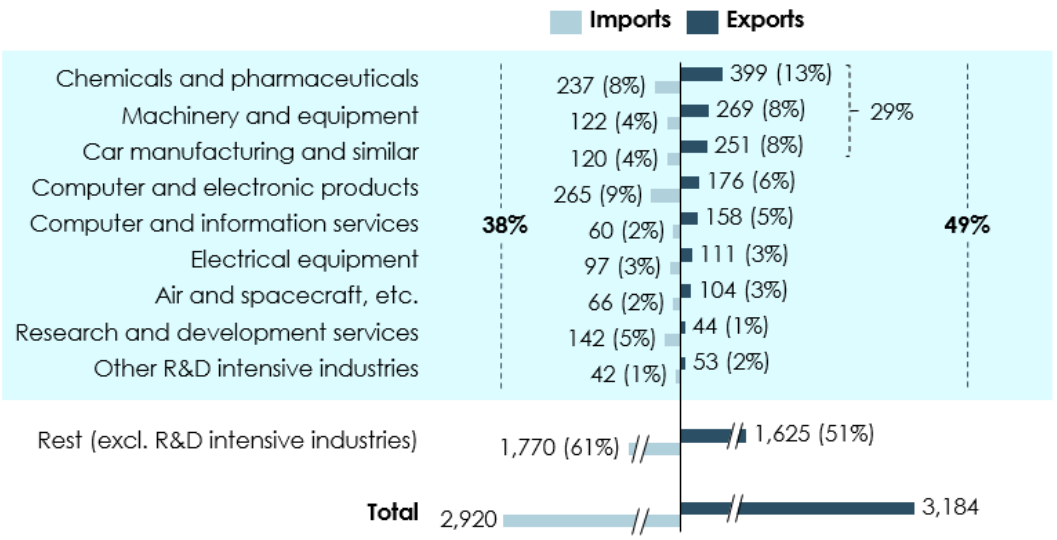


Note: Trade includes both extra-EU imports and exports from/to the US. Bubble size represents share of total trade.
Source: Copenhagen Economics based on OECD and EUROSTAT trade data, and OECD (2018) Taxonomy of economic activities based on R&D intensity

External trade patterns also indicate in which R&D intensive sectors the EU and its trading partners have a comparative advantage noting that other factors such as regulation and trade policies also play a role in the formation of trade patterns. Approximately 49% of extra-EU exports belong to R&D intensive sectors,[15] with the chemicals and pharmaceuticals, machinery and equipment, and car manufacturing sectors accounting for approximately 29% of all extra-EU exports, see Figure 6. Moreover, the value of exports within these three aggregated sectors exceeds the value of imports, meaning there is a positive trade balance for the EU within these areas. This suggests that the EU has the capacity to produce goods and services belonging to these sectors at a lower opportunity cost relative to many of its trading partners. The EU is endowed with a highly skilled labour force, which is required for the production of R&D-intensive goods and services, such as pharmaceutical products.[16] In contrast, the EU has a negative trade balance in computer and electronic products and research and development services, where the value of imports exceeds the value of exports, and US firms are a major supplier.

[15] R&D intensive sectors include those that are classified as medium-high and high R&D intensive based on OECD (2018) "Taxonomy of economic activities based on R&D intensity", see Table 1.
[16] Gausas et al. (2019) "EU and ILO: Shaping the future of Work", report prepared for the European Parliament.

Figure 6
Extra-EU trade distributed across R&D intensive and remaining sectors, 2019
Billion EUR (percent of total trade)



Note: Based on OECD's classification on R&D intensive industries
Source: Copenhagen Economics based on OECD and EUROSTAT data

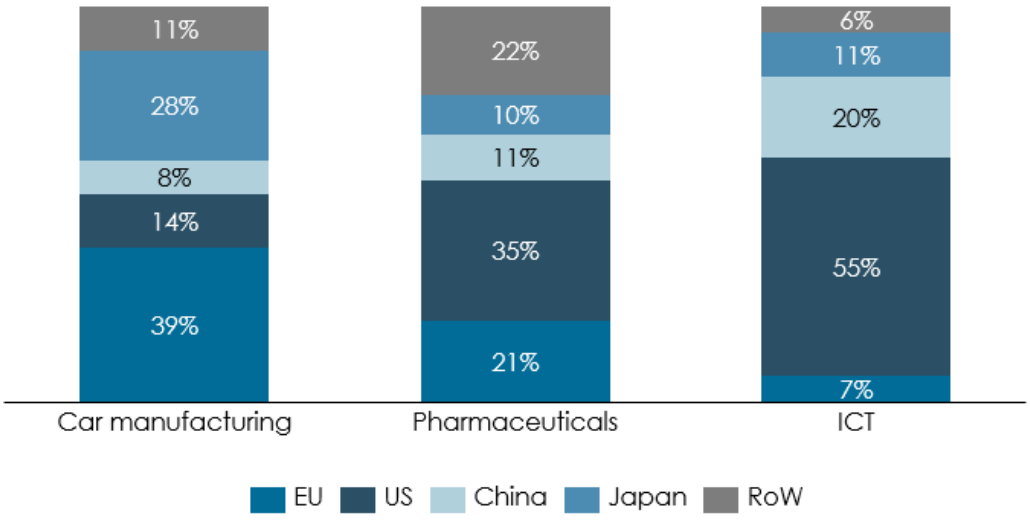
In addition to direct trade that takes place between the US and the EU, US companies are key actors in the EU economy, and vice versa. For example, in 2018, US MNEs in the ICT industry[17] supplied approximately USD 257 billion through their local affiliates in Europe.[18] Therefore, the activities of subsidiaries are economically significant and trade statistics do not alone reveal the full magnitude of the US-EU trade partnership.

The distribution of the global revenue from the world's largest companies in ICT, pharmaceuticals and car manufacturing by geography provides another perspective on the comparative advantages of the EU's main trading partners, including the US. While 39% of global revenue in car manufacturing originates from the EU, 55% of global revenue in ICT originates from US-based companies, indicating that the US has a comparative advantage in ICT, see Figure 7.

[17] Otherwise referred to as the "Information" industry, consisting of the following: "data processing, internet publishing, and other services", "motion picture and sound recording industries", "publishing industries, except internet (including software)" and "broadcasting and telecommunications", see https://www.bea.gov/news/blog/2016-04-21/industry-focus-whats-economic-impact-information-industry

[18] Bureau of Economic Analysis (2021) Data on activities of multinational enterprises, U.S. Direct investment abroad.

Figure 7
Revenue in automotive, pharmaceutical and ICT sectors by headquarters of global companies, 2020
Percent of global sales of the world's 2,500 largest R&D intensive companies



Note: ICT includes software & computer services and tech hardware & equipment
Source: Copenhagen Economics based on Economics of Industrial Research and Innovation scoreboard 2020 (European Commission)

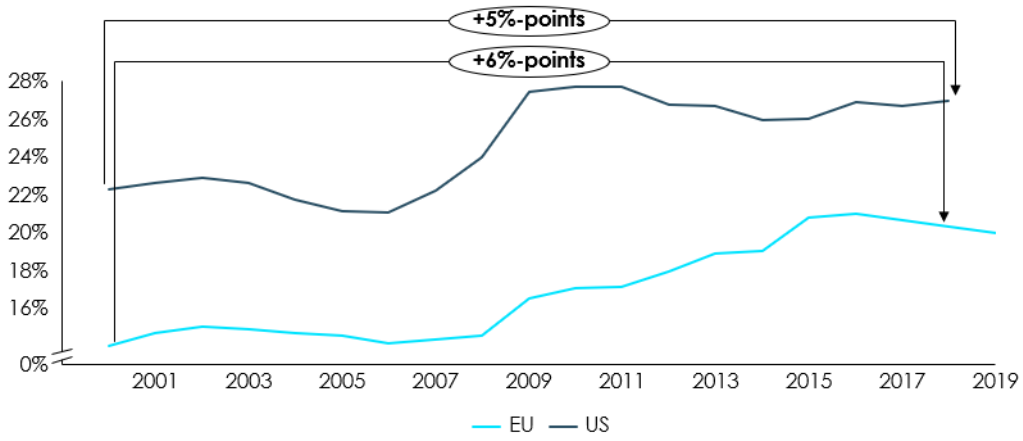
As the most significant contributors to EU-US trade, R&D intensive industries are of increasing economic importance to both economies; the intangible fixed asset as a share of total capital investments grew by 5-6 percentage points in the past twenty years, see Figure 8. Investments into intangible fixed assets, including investments into research and development as well as computer software and databases, are found to lead to significant productivity impacts.[19] A high level of productivity is a key determinant of the economic significance of these R&D intensive sectors.

This is a central point because it is precisely in such industries that low levels of non-tariff barriers are essential for mutually beneficial trade. These sectors are often highly regulated and depending on public procurement industries as is the case of life science industries while access to markets are often provisional on public approval. Furthermore, the very fact that these industries are driven by economics of scale makes it particularly important for firms have access to large international markets: the larger the market, the more scope for recuperating the high costs of R&D.

In conclusion: it is crucial that EU and US work jointly to create a market that allow their industrial leaders in these industries the largest possible market by reducing barriers to trade.

[19] OECD (2019) "Productivity growth and finance: the role of intangible assets – a sector level analysis"

Figure 8
Intangible fixed assets as a share of gross fixed capital formation
Percent of gross fixed capital formation



Note: No US data for 2019
Source: Copenhagen Economics based on EUROSTAT and OECD capital formation by assets data

1.2 TAPPING INTO DIGITAL TOOLS AND PLATFORMS

EU businesses use a range of digital platform services as inputs in their operations, for example for marketing and matching with customers.[20] Examples of digital platform services include operating systems such as Windows, online search engines as for example Google, online social networks like Facebook, cloud computing, and online intermediation offered by e.g., Amazon Marketplace, see Table 1.

Table 1
Examples of digital platform services and usage

Digital platform	How they are used by EU businesses	Examples
Cloud computing services	• Provision of computing capacity to replace in-house server infrastructure. • Secure environment through high protection standards.	• Amazon web services
Online search services	• Ability to search the world wide web with personalized ranking based on integration from multiple services leading to enhanced overall user experience.	• Google search
Online social networking services	• Presentation of the business with high reach and low costs.	• Facebook for Business
Operating systems	• Operating systems for computers and other IT-equipment allowing for a more user-friendly access to computers and the internet.	• Windows, iOS
Online intermediation services	• Better matching of businesses and consumers. • Internalisation of network effects, i.e., larger reach. • Reduces information asymmetries: More choices entail more competition which reduces consumer prices.	• Amazon Marketplace

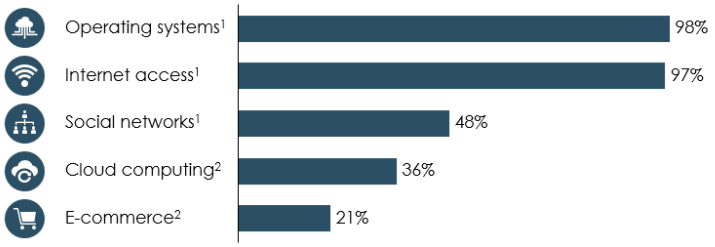
Note: The table shows selected examples of digital platform services. There are other digital platform services that businesses use.
Source: Copenhagen Economics based on a selection of services described in the DMA.

[20] Copenhagen Economics (2020, a), Copenhagen Economics (2020, b).

These digital tools and platform services are important inputs for many EU businesses, as digital platforms work as *aggregators* by enabling scale economies and reducing transaction costs for businesses using the platform.[21] Digital platforms are intermediators of communication, for example by delivering messages from senders to receivers, by connecting content creators and audiences, or by facilitating matches between buyers and sellers.[22]

In an EU-wide survey, almost all EU businesses indicate that they are relying on internet access and are using operating systems for running their business, see Figure 9.

Figure 9
EU businesses using digital platform services and internet access, 2019/2020
Per cent



Note: 1) 2019, 2) 2020. Based on a survey. The survey population consists of enterprises with 10 or more persons employed. Micro-enterprises (0-9 persons) are covered on an optional basis. The EU covers EU27. We assume that the selected digital platform services proxy the general digital platform services in Table 1. Almost 142,000 enterprises with at least 10 persons employed were surveyed in the 2020 survey.
Source: Copenhagen Economics based on Eurostat survey data [isoc_ci_eu_en2].

In addition, close to half of EU businesses have taken up online social network services, indicating that targeted, low-cost advertising via social networks[23] adds value to EU businesses, see Figure 9. This is indeed in line with previous research on the value of digital tools and Facebook's family of Apps and technologies.[24] Cloud computing is another key input for more than one-third of EU businesses, introducing additional computing capacity and ensuring a secure environment to store company data.[25]

[21] Oxera (2021), p. 3.
[22] Oxera (2021), p. 17.
[23] Forbes (2017).
[24] Copenhagen Economics (2019)
[25] The EU Member States have issued a declaration to work together towards a European cloud federation with public-private co-investments to help close the cloud investment gap in Europe. For example, the EU Commission aims to finance €2 billion in this area in the period 2021-2027. see Declaration by 27 EU Member States (2020), p. 3-7.

Another piece of evidence suggesting that EU businesses have become more digitalised is the growing use of digital tools as inputs for optimising logistics and production (e.g., 3D printing or robotics), using cloud services, Internet-of-Things, and big data analytics.[26] Basically, digital platform services have become standard inputs for production in EU businesses, and EU *exports* are relying increasingly on these digital inputs as well. In fact, IT and other information services'[27] share of value added in extra-EU exports has increased from 1.8% to 2.5% from 2005 to 2015, see Figure 10. Similar development is present for intra-EU exports. Other digital platform services, such as software publishing, are also expected to be increasingly important inputs in EU exports.[28]

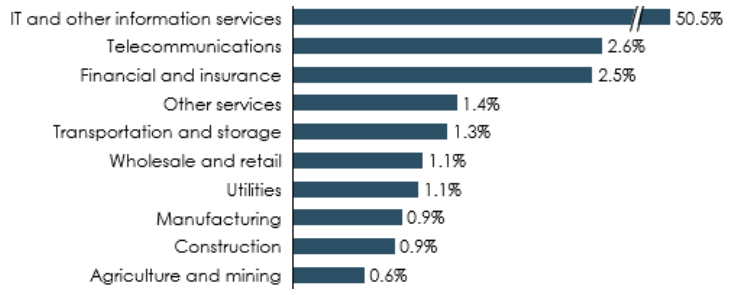
Figure 10
IT and other information services' share of value added in extra-EU exports, 2005-2015
Per cent of total value added in exports

Note: The industry "IT and other information services" includes computer programming, IT consultancy and related activities, and data processing, hosting, web portals, and other information service activities. The numbers cover the EU27's and the UK's export to countries outside the EU and UK.
Source: OECD Trade in Value added (TiVA)

In particular high-value and digitalised industries such as IT, telecommunications, and financial and insurance use IT and other information services as input for extra-EU exports, see Figure 11. In agriculture, mining, and construction industries, these tools are used as inputs to a lesser extent. Also, transportation, wholesale, retail, and manufacturing use these tools as inputs for their extra-EU exports.

[26] European Investment Bank (2020) and Forbes (2018).
[27] The industry "IT and other information services" includes computer programming, consultancy and related activities, and data processing, hosting, web portals, and other information service activities.
[28] Software publishing is grouped under the same industry group as book publishing, newspapers, journals, etc. and cannot be separated, which is why it is not included in the figure.

Figure 11
IT and other information services' share of value added in extra-EU exports for different industries, 2015
Per cent of total value added in exports



Note: The industry "IT and other information services" includes computer programming, IT consultancy and related activities, and data processing, hosting, web portals, and other information service activities. The numbers cover the EU27's and the UK's export to countries outside the EU and UK.
Source: OECD Trade in Value added (TiVA)

SMEs benefit from digital platform services

Small- and Medium-sized Enterprises (SMEs) also rely on digital platform services to support their exports. Existing research points to SMEs making use of digital platform services to overcome export barriers,[29] which are relatively bigger for SMEs compared to larger firms.[30] Digital platform services are especially important for SMEs when entering new geographical markets, cf. Figure 12. Ad servers and internet search engines are low-cost options for SMEs to advertise their goods and services, significantly reducing marketing costs and lowering the barriers from geographical distances.[31]

Figure 12
Facebook's apps and technologies support SMEs' export, 2020

Note: The numbers cover the EU27's and the United Kingdom's export to countries outside the EU and UK.
Source: Copenhagen Economics (2020, b), page 12.

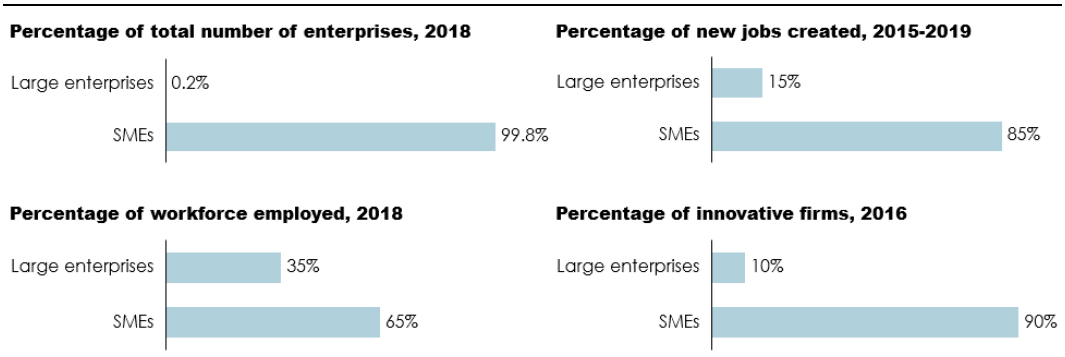
[29] Copenhagen Economics (2020, a), p. 21-22.
[30] Larger firms can to a greater extent lower export risks by diversifying operations, having in-house trade departments, and utilising economies of scale whereas SMEs typically have fewer resources to absorb export risks. See OECD (2006), p. 10, and Meltzer (2014), p.1.
[31] Copenhagen Economics (2020, a), page 22.

In addition, an EU survey[32] found that 82% of SMEs use search engines to promote products and/or services online, and 42% of SMEs use online marketplaces to sell their products and services. This is significant, as EU SMEs account for 32% of extra-EU exports, equivalent to EUR 450-600 billion,[33] some of which is enabled by digital platform services. As specific examples,

- Facebook apps and technologies have been found to enable EU SME sales worth EUR 208 billion, of which EUR 40 billion were extra-EU exports.[34]
- YouTube enables video content creators in the EU to distribute their videos globally, and in 2020, more than 50% of the watch time on EU based YouTube channels was seen by users outside the EU.[35]

SMEs are important for the EU economy as they make up a large part of the value creation in the EU; 99.8% of all EU firms are SMEs, 65% of the EU workforce is employed by SMEs, and 85% of new jobs in the EU were created by SMEs between 2015 and 2019, see Figure 13.

Figure 13
Key business statistics for SMEs and large enterprises in the EU
Per cent



Note: SMEs also includes micro-firms (0-9 employees). Bottom right: Includes firms that have implemented at least one innovation.
Source: Top left: CE analysis based on Eurostat [sbs_sc_sca_r2], top right: Von der Leyen, U. (2019): A Union that strives for more: My agenda for Europe, bottom left: CE analysis based on Eurostat [sbs_sc_sca_r2], bottom right: OECD (2019), SME and Entrepreneurship Outlook 2019, Chapter 7.

In addition to the large influence on value creation in the EU, SMEs also contribute greatly to innovation. Of EU firms deemed innovative, 90% are SMEs.[36] Hence, digital tools and inputs that are important and helpful to SMEs, are important for Europe.

[32] European Commission (2017), page 22.
[33] Estimated based on European Commission (2020), page 2, and OECD trade statistics.
[34] Copenhagen Economics (2020, b), page 13-14.
[35] There are more than 2,000 EU-based YouTube channels with over 1 million subscribers as of 2020. Numbers are YouTube 1P figures.
[36] Innovative firms include firms that have implemented at least one innovation in 2016.

1.3 TRADING GAINS POTENTIALLY AT RISK

As established in this chapter, trade is deeply rooted in EU's DNA, and the EU economy benefits from trading with the world by exporting goods and services where the EU has a comparative advantage and importing goods and services where it does not. Over 50% of the overall EU-US trade is linked to R&D intensive industries i.e. industries where access to a large market is crucial for recuperating the high spending on developing new products and services. Hence, the EU and US have a joint interest in lowering the cost of exports and imports as well improving innovation and quality by creating a large joint market.

In this light, the DMA raises two kinds of risk, which we will discuss in the following chapters:

In chapter 2, we investigate whether some of the provisions of the DMA may de facto discriminate against firms that have their main residence or activity outside the EU. The DMA targets only a narrow set of companies defined as 'gatekeepers' and consequently, we find that in-scope companies may be competing against out-of-scope companies in several cases. Further, the effective target of the regulation becomes US GAFAM along with a list of other potential gatekeepers, of which two thirds are US based.

In chapter 3, we examine whether the proposed DMA may impair functionalities of digital platform services that create value for EU business users which could in turn result in reduced productivity and competitiveness. Indeed, digital platform services have become increasingly important inputs for EU firms' operations and exports, as they lower barriers to trade which is particularly important for SMEs. SMEs make up a very significant share of the overall business composition in the EU. In chapter 3 we find that, the DMA provisions can impair key functionalities of the services in scope and reduce productivity and competitiveness of EU business users of Core Platform services.

CHAPTER 2

THE POTENTIALLY DISCRIMINATORY EFFECTS OF THE DMA

The objective of the DMA is clear, namely, to foster competition and innovation by increasing the contestability and fairness of digital markets.

In this chapter we investigate the scope of the DMA starting with an introduction of the objective and scope of the DMA (2.1). After this, we dive into the in-scope and out-of-scope business models considering this from a competition perspective (2.2). Lastly, we look at the de facto target of the DMA considering differences in industry structures as well as the nature of the criteria and thresholds being applied compared to the some of the core principles upon which EU regulation is built (2.3).

2.1 THE OBJECTIVE AND SCOPE OF THE REGULATION

The objective of the DMA is to increase contestability and fairness of digital markets. The core issue and the rationale for intervention is that whereas more than 10.000 online platforms[37] are active in the EU, only a few large platforms lay out the infrastructure for innovation, competition, and consumption in digital markets. These companies have a strong position holding three main characteristics:

1. **Economics of scale and scope** on the supply side fosters higher bargaining power
2. **Strong network effects** on the demand side leads to beneficial spill-over effects among users
3. **Data-driven competitive advantage** through the ability to innovate based on user generated data

The DMA aims to increase contestability and fairness in terms of innovation and market entry by introducing regulation in the digital markets. However, the regulation targets only a narrow set of companies defined as 'gatekeepers' and as such introduces a set of criteria to be met by some players in the market and not by the industry as a whole.

A designated gatekeeper must comply with a set of provisions in of each of their core platform services listed in the relevant designation decision. This set is divided into (i) self-executing provisions (Article 5) and (ii) provisions that are susceptible to specification (Article 6).[38] Section 3 describes in more detailed how a subset of these obligations impact key characteristics of different core platform services, whereas the following section will be focused on the scope of the regulation.

What is a gatekeeper?

The DMA targets a subset of digital companies defined as 'gatekeepers', characterised as:

0. Being a **core platform service** (CPS) operating at least one of eight pre-defined business models: Online search engines, online intermediation services, social networking, video sharing platform services, independent interpersonal electronic communication services,

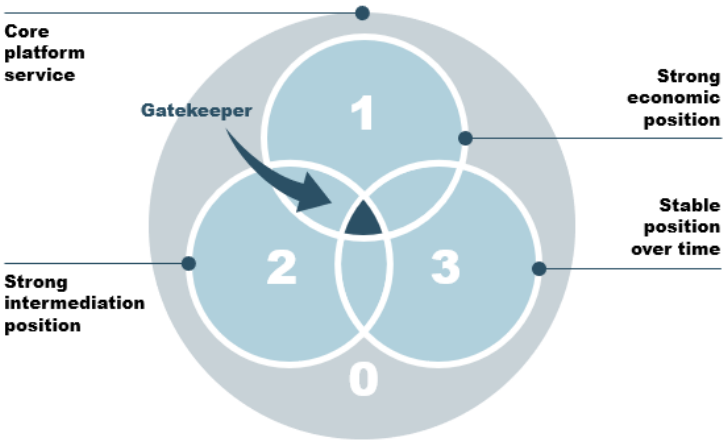
[37] Impact assessment of the Digital Markets Act, part 1 (2020)
[38] European Commission (2020)

operating systems, cloud services and advertising services[39] defined as core platform services (CPS)

1. Having a **strong economic position** with either an annual turnover of more than 6.5 billion in the European Economic Area or average market capitalization of more than EUR 65 billion and providing a CPS in at least three Member states
2. Having a **strong intermediation position** with more than 45 million monthly active end users and more than 10.000 yearly active business users established in the Union in the last financial year
3. Maintaining a **stable position over time** meeting criteria 2 and the turnover criteria in part 1 in last three financial years

In short, for a company to be characterised as a gatekeeper they need to be providers of a CPS *and* live up to all the three criteria (1, 2 and 3),[40] see Figure 14.

Figure 14
Definition of a gatekeeper



Source: "Regulating digital gatekeepers" EPRS; European Commission

2.2 TARGETS AND THRESHOLDS

The scope of the DMA is clearly defined ex ante, but what are the de facto implications of this scope given industry compositions? Which implications does this hold with respect to competition and how does it comply with fundamental policy principles? In this section we consider the implications of the scope of the DMA.

39 Advertising services need to be complemented with one or more of the other business models to categorize as a core platform service

40 Alternatively they need to live up to qualitative criteria, which are harder to assess, but several variables can be considered, e.g., ability of a platform to control access or to leverage its dominant position.

Competition in- and out-of-scope

Looking at the definition of core platform services, one can argue that they offer functionalities which are also offered by a number of other service providers (online as well as offline). In other words, some of the business models in-scope of the regulation are competing against out-of-scope business models. This is the case for services such as music and video sharing versus streaming, online cloud services versus cloud-based PSA and general search engines versus specialised search engines. On the latter, it has for example been shown a majority of 56% of EU consumers first turns to specialised search engines, websites or apps while only 28% start their search for flights, hotels or shopping on general search engines. Table 2 elaborates the general point, providing specific examples for each of the core platform services in scope.

Table 2
Examples of competition in- and out-of-scope of the DMA across the eight CPS

BUSINESS AREA	IN-SCOPE	OUT-OF-SCOPE	COMPETITION	KEY DIFFERENCE
ONLINE SEARCH ENGINES	General search engines: • Google search	Specialised search functions: • Travel websites • Retail websites	Private users seeking information	Search bounded within website for out-of-scope
ONLINE INTERMEDIATION SERVICES	Online marketplaces: • Amazon	Grocery stores: • Ahold Delhaize • Carrefour • Lidl	Private customers buying groceries; Suppliers seek largest userbase	Users able to supply goods vs. stores determining the supply of goods
SOCIAL NETWORKING	Social networks: • Facebook	Web-based communities	Private users seeking social interaction with other people	Platform based vs non-platform
VIDEO SHARING PLATFORM SERVICES	Video sharing: • YouTube	Video streaming: • Netflix • HBO • Disney+ Music streaming: • Spotify • Tidal	Private users watching videos or listening to music	Content provided by users vs. content provided by supplier
INDEPENDENT INTERPERSONAL ELECTRONIC COMMUNICATION SERVICES	Communication platform: • WhatsApp • Gmail	Telekom: • Deutsche Telekom • Orange	Private users calling or texting each other	Comms platforms offer communication within the platform where telecom goes across suppliers
OPERATING SYSTEMS	Operating systems: • Google Android	Non-platform based operating systems	Operating system to control certain device	Platform vs non-platform
CLOUD SERVICES	Cloud computing services: • Google Cloud Platform • Microsoft Azure	Cloud based PSA[2] software: • Atos • SAP • Deutsche Telekom • OVH	Data accessible to several users; Developers want to supply the largest platforms	PSA software targets only business users where cloud computing services also targets private users
ADVERTISING SERVICES	Online ads if platform includes at least one of the other business models[1]: • Google ads	Standalone advertisement: • News papers • News media	Businesses buying advertisements; Private users receiving info on goods and services	Data from online advertisements can be beneficial for other business models

Note: 1) online intermediation services, social networking, video sharing platform services, independent interpersonal electronic communication services, operating systems, or cloud services; 2) Professional service automation
Source: Copenhagen Economics based on internal analysis and desktop research

This is an issue to the extent that the regulation ex ante imposes different burdens on companies competing for the same customers. In essence, the examples illustrate that the in-scope definitions appear not to be driven by careful market analysis to achieve a well targeted regulation. Furthermore, for the companies in-scope of the DMA, the set of obligations to comply with vary across gatekeepers, specifically this regards the obligations under Article 6.

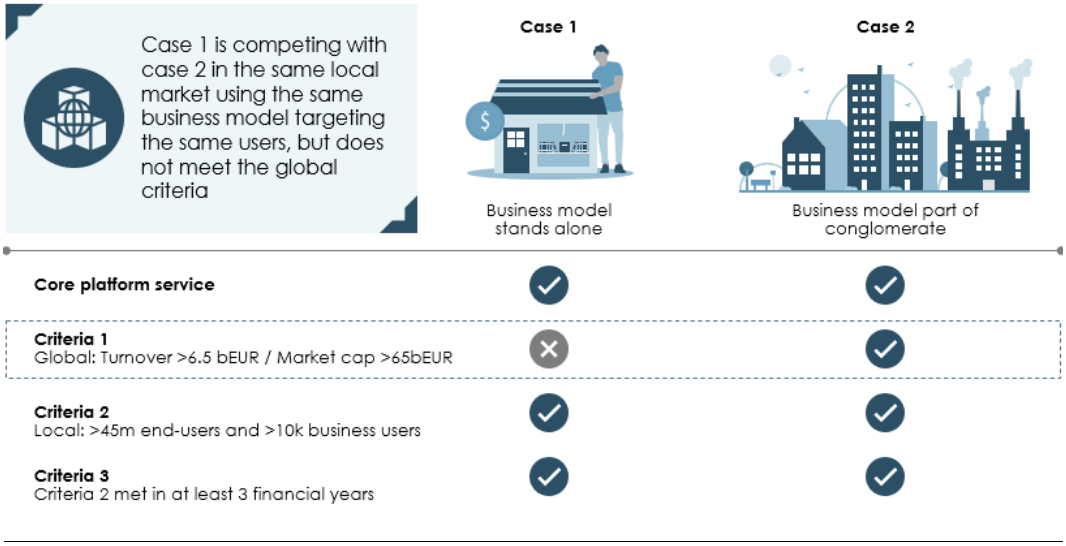
Generally, the competition between in-scope and out-of-scope businesses leaves an open question on the fairness of the obligation, and why some businesses should not comply with the same set obligations?

Thresholds and industry compositions

In the Impact Assessment of the Digital Services Act, the Commission underlines that "Very large platforms represent a higher level of societal and economic risk because they have become de facto public spaces, playing a systemic role for millions of citizens and businesses. In other words, they have a significantly higher impact on society and the Single Market than smaller platforms because they **reach a large audience**."[41] Phrased differently, the risks posed by large platforms relate to their intermediation position (number of users) and not to their size (revenue and market cap) as such.

However, the use of global market cap thresholds to determine the strength of market position is debatable. This point is illustrated in Figure 15 depicting two companies with a similar position in the EU market. One company is part of a conglomerate with a market cap above EUR 65 billion, whereas the other is not. They both have a turnover within the European Economic Area of less than 6.5 billion. In this case, the conglomerate would be in-scope of the DMA, whereas the other company would not despite their similar position in the EU.

Figure 15
Market cap and turnover in the tech sector compared to thresholds



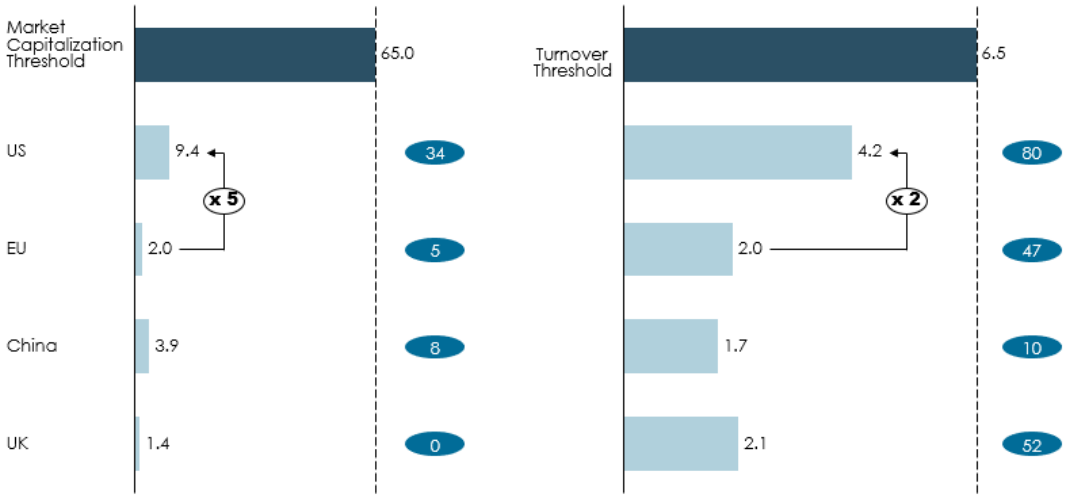
Source: European Commission; Copenhagen Economics internal analysis

[41] European Commission (2020), Impact assessment of the Digital Services Act, part 2, p. 62

Furthermore, there are several arguments against increasing return of networks efforts, which support the fact that platforms with smaller networks can compete with larger platforms[42]. Some of the arguments goes by diminishing returns or local bias, weak intertemporal network effects or low multihoming costs. This is e.g., observed by less crowded and possibly more profitable environment for products on smaller platforms, or in context of social networks where a more narrow and homogeneous set of users is preferred. These arguments make the rationale of Criteria 2 questionable.

Considering revenues and market caps among tech companies based in different locations, we find that US tech companies have an average market cap 5 times the size of the European average, and a turnover twice the size. All else equal, this implies that the DMA is more likely to target US based companies compared to companies based in e.g. the EU, China and the UK given the industry structure. Looking at tech companies with a revenue above EUR 10 million, 34 US based companies exceed the market capitalisation threshold, whereas this is the case for only 5 EU based companies, see Figure 16.

Figure 16
Market cap and turnover in the tech sector compared to thresholds
Average market cap[1] and annual turnover[2] in billion EUR
Number of companies exceeding the threshold



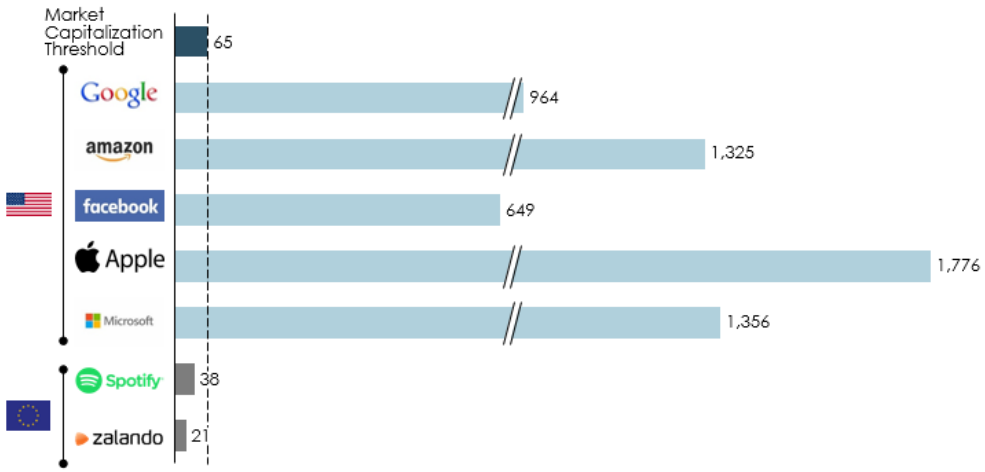
Note: Analysis includes only companies with a revenue above EUR 10 million, 1) Average market cap of publicly listed companies in the technology sector in 2021; 2) Average annual turnover for private and publicly listed companies in the technology sector
Source: Eikon

De facto targets

Considering e.g. the threshold on market cap in practice, European tech companies like Spotify and Zalando fall just short of meeting the criteria, whereas the US GAFAM exceeds thresholds by magnitudes, see Figure 17. However, given the definition of a CPS and the other criteria on revenue, the criterion on market cap is unlikely to make a difference in practice in many cases.

[42] Carmelo Cennamo (2020): Value Preserving Regulation

Figure 17
Market cap for selected companies compared to thresholds
billion EUR

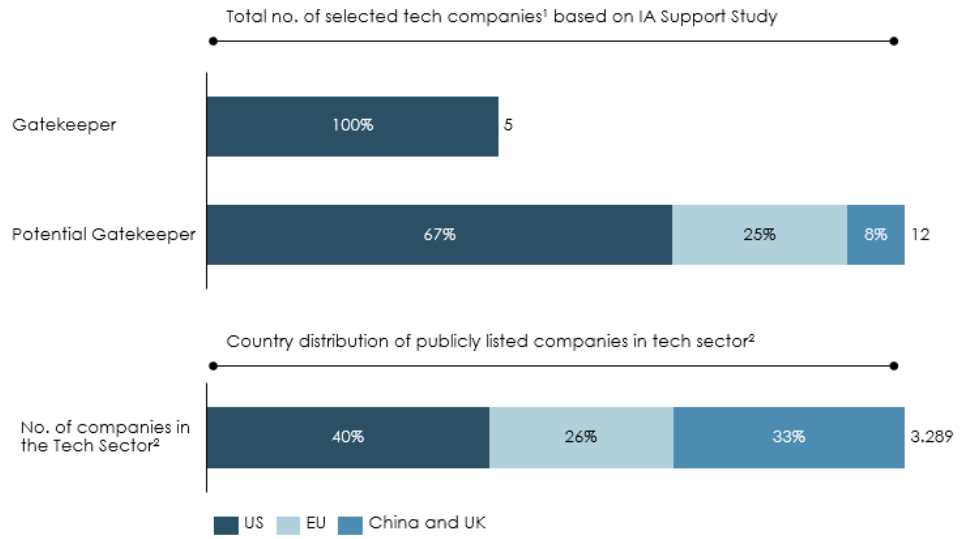


Note: Market cap is taken between December 2020 and May 2021
Source: MacroTrends (2021); Spotify - Yahoo Finance (2021); ZALANDO - Yahoo Finance (2021)

Given the definitions of a CPS and the thresholds involved with the criteria, the de facto target of the regulation becomes the US GAFAM along with a list of other potential gatekeepers, of which around two-thirds are US based.

Indeed, this is a result of the fact that relevant large tech companies are predominantly based in the US. However, comparing the de facto target of the DMA based on the Impact Assessment to the entire population of companies in technology, we find that there is still a disproportionate amount of US companies that can be characterised as gatekeepers and potential gatekeepers, see Figure 18.

Figure 18
Tech companies defined as gatekeepers across geographic origin
Number of selected tech companies[1]



Note: 1) Analysis based on a selection of companies chosen according to IA Support Study; 2) TBC definition of the Economic Sector Technology The Refinitiv Business Classification (2021)
Source: Finance Yahoo (2021); ipropertymanagement (2021); eDesk (2021); Investor Uber (2021); Variety (2021); SAP (2021); Eikon data; Impact Assesment Support Study (2020)

2.3 THE DMA AND THE PRINCIPLE OF EQUAL TREATMENT OF COMPARABLE SITUATIONS

The principle of equal treatment is a fundamental principle of EU law stating that comparable situations should be handled similarly from a regulatory perspective. As expressed by advocate general Sharpston "It is settled case-law that the principle of equal treatment, which is one of the fundamental principles of EU law, means that comparable situations should not be treated differently unless such different treatment is objectively justified, and that situations which are not comparable should not be treated the same way."[43]

The fact that the regulation de facto targets US based companies disproportionately does not necessarily violate this principle: The key point is whether the regulation has been framed in such a way that it carefully considers whether the measures chosen to attain the objectives are designed such as to avoid conflicting with the "equal treatment" principle.

43 See InfoCuria (2021). Advocate general Sharpston states "It is settled case-law that the principle of equal treatment, which is one of the fundamental principles of EU law, means that comparable situations should not be treated differently unless such different treatment is objectively justified, and that situations which are not comparable should not be treated the same way."

A key challenge is the essential feature of the DMA: it imposes regulation ex ante rather than ex post. This implies that the regulation applies irrespective of whether any market failures or breaches with EU law have been identified. The regulation is automatically applied to companies with certain characteristics in terms of business model, size and intermediation position. This assumes that these circumstances are on a rather universal basis the drivers of the outcomes that the regulation is meant to address.

Such an ex ante approach is inherently associated with challenges and consequently alternatives have been suggested. In the UK, the Digital Markets Taskforce (DMT) proposed a regulatory approach for digital markets that enhance the role for effect-based analysis. The main difference between DMTs proposal and the DMA is that the provision can only be imposed to rectify an "adverse effect on competition or consumers (AECC) i.e., the regulators need to perform a holistic assessment on different market factors such as quality, innovation and other price indicators.[44] In Germany, the approach has been to allow firms to challenge conduct regulation if they can justify that the consumer benefits outweigh costs. While accepting that market positions as exemplified by users should be used to impose ex ante conduct regulation, the German Commission on Competition Law 4.0 has also clarified that firms below thresholds are subject to standard competition rules. [45] In this perspective, one could claim that ultimately conduct regulation will 1) apply to all firms providing they hold sufficient power in the relevantly defined marked irrespective of their size and 2) the difference between "small" and "large" players is that large players are automatically in-scope but obligations can be waived when benefits exceeds costs.

Our overall assessment is that both the in-scope provisions as well as the threshold definitions may lack robustness as criteria for regulation. In this section we discussed specifically the global nature of the market cap criterion, the link between economic size and risks as well as the scope of the regulation being limited to CPS. It is in this context that the de facto targeting of non-EU firms may become a discrimination problem, particularly with respect to the EU's legal principles and policy of equal treatment for comparable situations.

44 Oxera (2021): How platforms create value for their users: implications for the Digital Markets Act
45 The Commission "Competition Law 4.0" (2019): A new competition framework for the digital economy

CHAPTER 3

EU EXPORT AT RISK

In this chapter, we look at the potential impact of the DMA proposal on EU businesses as users of digital platform services. We investigate, in particular, whether the DMA provisions could impair key functionalities of the services in scope.

We start by looking at the DMA Impact Assessment and identifying potential gaps in its assessment of user costs (section 3.1.). We then turn to look at specific examples of how individual DMA provisions may reduce functionality of digital platform services and discuss how this could further reduce productivity of EU businesses and put EU exports at risk (section 3.2.).

3.1 IMPLICATIONS OF THE DMA ON USERS OF CORE PLATFORM SERVICES

An Impact Assessment (IA) of the DMA proposal has been carried out to evaluate the expected costs and benefits of the DMA proposal on the EU economy. By looking at the *collective set* of the DMA's provisions, the IA concludes that main costs of the DMA are administrative costs for the European Commission and national authorities, compliance costs for gatekeepers, and higher search costs for consumers.[46]

While the IA does recognise businesses and SMEs as users of digital platform services, it touches only very lightly on the potential hampering effect of the DMA on digital platform services as an input to these businesses. The IA simply concludes that; '*While some loss of revenue for gatekeepers is expected, there are no indications that this would result in significantly higher fees and/or reduced quality for businesses and consumers,*'[47] without providing additional documentation behind this finding.

The IA, however, fails to consider the *individual* provisions and how they may individually impact core platform services on offer.

By looking at *individual* provisions of the DMA and how key functionalities of well-known examples of core platform services, like the Google Search (Online Search Engine) or the Apple App store (Pre-installed in iOS Operating System service), we do find indications that the quality of digital platform services, and thereby their helpfulness and value added to users, is indeed at risk of being negatively affected by the provisions of the DMA, see Table 3.

46 DMA IA part 2, section 3.2, p.62-66.

47 DMA IA part 1 para.302, p. 89.

Table 3
Examples of digital platform services and how the DMA may restrict their functionalities

DIGITAL PLATFORM SERVICES	EXAMPLES OF SERVICE	KEY CHARACTERISTICS OF DIGITAL PLATFORM SERVICES	DMA PROVISIONS THAT COULD IMPACT ON KEY CHARACTERISTICS
CLOUD COMPUTING SERVICES	Amazon Web Services	• Cloud services are secure environments to store, process and make computations of data. • Provision of cheap cloud computing services is possible due to the combination with other revenue generating services.	• Art. 5(a) may prevent the combination of personal information from multiple services without explicit user consent. • Art. 6(d) may disable platforms from integrating access to cloud computing services in other services.
ONLINE SEARCH ENGINES	Google search	• Search engines use personal data such as location data, or user preferences to show the most relevant search result, e.g. a selection of small businesses or restaurants in the vicinity of the user.	• Art. 5(a) may prevent integration of search results with previous search history, location etc. without explicit user consent. • Art. 6(d) may disallow the integration of other services such as maps or video services in search results.
OPERATING SYSTEMS	Apple App Store pre-installed in iOS	• Operating systems have pre-installed app stores that guarantee security and quality of apps.	• Art. 6(b) requires pre-installed software to be removable. • Art. 6(f) requires interoperability of ancillary services and gives business users access to a gatekeeper's operating system, hardware, and software. • Both could reduce security, user trust in App stores, and quality of apps.

Note: The table covers the four provisions of the DMA: 5(a), 6(b), 6(d), and 6(f).
Source: Copenhagen Economics based on DMA, Oxera (2021) p. 49-50, and own research.

In this report, we look at a subset of provisions particularly relevant for EU business users' ability to export, see Box 1. In the remainder of this chapter, we provide examples of potential impact of the DMA on EU exports, where EU businesses rely on core platform services (online search engines and operating systems) for their exports. We use these to illustrate how a more careful and detailed assessment of DMA impact could look.

Box 1 A subset of DMA provisions reviewed for this report

The DMA proposal holds 18 restrictions and prohibitions to apply to gatekeepers (Article 5 and 6 plus sub-provisions). We have looked only at a subset of provisions, namely 5(a), 6(b), 6(d), and 6(f) for this analysis, but it could easily be extended to assess more or all provisions one by one to thoroughly investigate potential impacts of the DMA proposal as it stands.

Article 5(a) Prohibition to combine personal data across services without consent
A gatekeeper shall refrain from combining personal data sourced from its core platform services with personal data from any other services offered by the gatekeeper or with personal data from third-party services, and from signing in end users to other services of the gatekeeper in order to combine personal data, unless the end user has been presented with the specific choice and provided consent in the sense of Regulation (EU) 2016/679.

Article 6(b) Prohibition to deny deletion of pre-installed software
A gatekeeper shall allow end users to un-install any pre-installed software applications on its core platform service without prejudice to the possibility for a gatekeeper to restrict such uninstallation in relation to software applications that are essential for the functioning of the operating system or of the device and which cannot technically be offered on a standalone basis by third parties.

Article 6(d) Prohibition to give preference to own services (self-preferencing)
A gatekeeper shall refrain from treating more favourably in ranking services and products offered by the gatekeeper itself or by any third party belonging to the same undertaking compared to similar services or products of third party and apply fair and non-discriminatory conditions to such ranking.

Article 6(f) Requirement to offer interoperability and third-party access
A gatekeeper shall allow business users and providers of ancillary services access to and interoperability with the same operating system, hardware or software features that are available or used in the provision by the gatekeeper of any ancillary services.

Source: The DMA proposal.

3.2 DMA PROVISIONS MAY REDUCE PRODUCTIVITY AND COMPETITIVENESS OF EU EXPORTERS

In general, we find that the DMA provisions[48] could potentially disable functionalities of inputs to EU business users in ways that could have implications for both 1) EU 'domestic' sales and 2) exports.

1) When inputs become less efficient due to lower quality, productivity of businesses relying on these inputs will decrease. This may, in turn, lead to reduced quality of the goods and services offered by EU businesses relying on digital platform services. Eventually, this may lead to reduced domestic sales for EU businesses.
2) Similarly, when inputs diminish in quality, the competitiveness of EU firms will weaken relative to non-EU firms that still have access to high-quality online platform services. This may lead to reduced exports for EU businesses.

[48] We have researched the potential implications of articles 5(a), 6(b), 6(d), and 6(f) for the purpose of this report.

In support of this intuition, we provide examples of online platform services and how they may be impaired by Articles 5(a), 6(b), 6(d), and 6(f) of the DMA, potentially leading to reduced quality of inputs to business users, and less trade and exports, see Table 4.[49]

Table 4: Examples of potential impact of DMA provisions on users and EU exports

SERVICE	SITUATION TODAY/VALUE OF SERVICE TO USERS	POTENTIAL SITUATION UNDER DMA PROVISIONS	POTENTIAL IMPACT ON USERS AND EU EXPORT
CLOUD COMPUTING SERVICES	• Cloud computing services allow companies to run software, operate databases etc. without making own hardware investments. • Most services require a paid subscription. • Cloud computing services are often integrated in other (revenue generating) services.	• If personal data cannot be combined across services without consent (Art. 5(a)), the ease of use and overall usefulness of integrating cloud computing services in other services is reduced. This could result in a perceived quality reduction for users of cloud services.	• EU businesses may face reduced functionalities of cloud services. • This could reduce the competitiveness of European businesses and thereby reduce EU trade.
ONLINE SEARCH ENGINES	• Online search engines elevate content by combining different information sources such as location data, or user preferences to show the most relevant search result, etc. • Information is presented in the most useful way based on personal data from the user.	• If online search engines are no longer able to integrate various services in search results (Art. 5(a) and 6(d)), search results could effectively become less informative to the user.	• Users may face less choice, less prioritised information, and hence experience higher user search costs. • It could also lead to less efficient matches between customers and EU businesses (reduce allocative efficiency), resulting in less domestic sales and exports.
OPERATING SYSTEMS	• App stores are necessary in the value chain for app developers to sell their applications to consumers. • With pre-installed and un-installable software in operating systems, platforms offer a secure environment for marketing of apps, trusted by users, as all apps are verified by the operating system to not contain, for example malware.	• Gatekeepers must offer interoperability (Art. 6(f) and can no longer rely on established verification procedures in the operating system to ensure secure apps through pre-installed app services (Art. 6(b)).	• Access to and interoperability of software may pose a risk of poorer app and operating system performance, and thus a worsened user experience. • Without the verification between operating system and app installation, overall security level of apps and payment systems may be reduced. • Reduced security, and thereby user trust, could limit user willingness to purchase apps via e.g., the Apple App Store. This may reduce the value of app stores as distribution channels of EU developed apps internationally, effectively reducing EU export of apps.

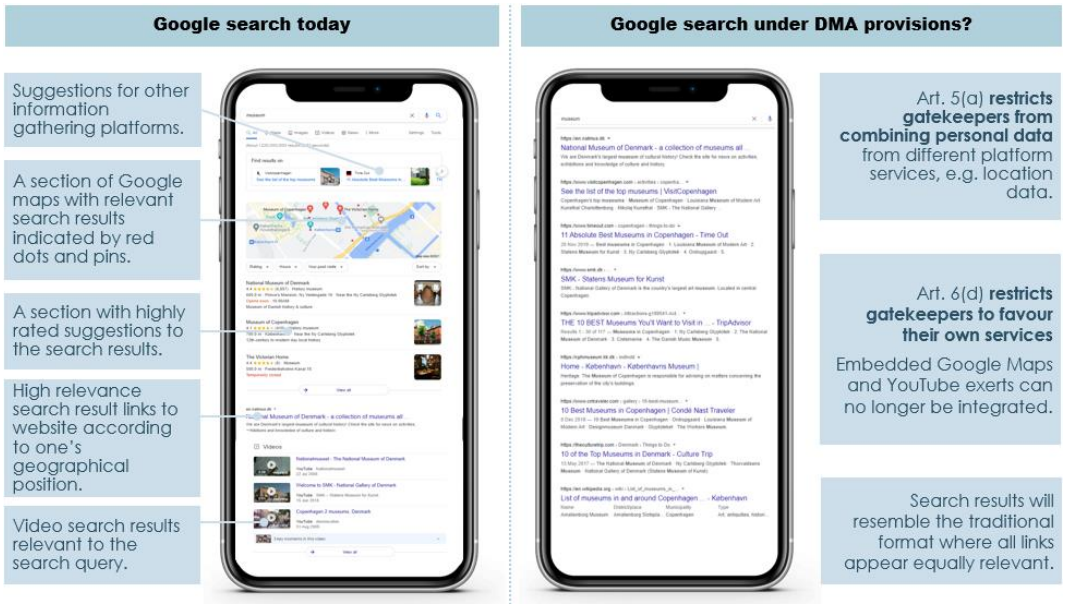
Note: The table covers fours provisions of the DMA: 5(a), 6(b), 6(d), and 6(f).
Source: Copenhagen Economics based on DMA proposal, Oxera (2021), p. 18, 26, 31, 49, and own research.

[49] In appendix B, we provide a full list of the DMA's 18 provisions and whether they may/may not influence core platform services. This table could serve as a starting point for a more detailed and comprehensive impact assessment of the DMA.

In addition to the overview in Table 4, we have researched a few concrete and well-known examples of core platform services like Google Search and App Stores (as an element of an Operating System) and how these may be affected by specific provisions in the DMA.

Looking at the **Google Search service**, see Figure 19, we find that it's functionalities may likely be affected by the DMA Articles 5(a), 6(b), 6(d), and 6(f) in a way that could reduce efficiency of the search from a user point of view (i.e. lower quality), increase search costs and friction for users, and potentially lead to fewer transactions between sellers and buyers as it simply becomes more difficult to find each other, see Figure 19. For example, the integration of Google Maps into Google Search gives the user a richer search experience with interactive maps with several possibilities, opening hours of businesses, reviews, etc. The integration lowers the information asymmetries between businesses and potential customers to enable better matches.[50] The DMA risks lowering the functionalities of this integration, which may reduce user experience and reduce number of matches between businesses and customers.

Figure 19
Example: Google Search, what if?



Note: Illustration from a google search with "Museum" typed into the search.
Source: Copenhagen Economics based on own research, the DMA, and a Google search.

We have also looked at the example of **Operating Systems** and Apple's App Store as a pre-installed software on Apple devices. With the DMA in place, the App Store app must be un-installable (contrary to today), introducing a risk that non-authenticated and potentially harmful software may be installed on the user's device (Art. 6(b)). For example, Apple provides protection and authentication to ensure that apps are free of malware that can harm the operating system. Apple does this by 'sandboxing' all apps on App Store.[51] Other app store providers have similar mechanisms in place.[52]

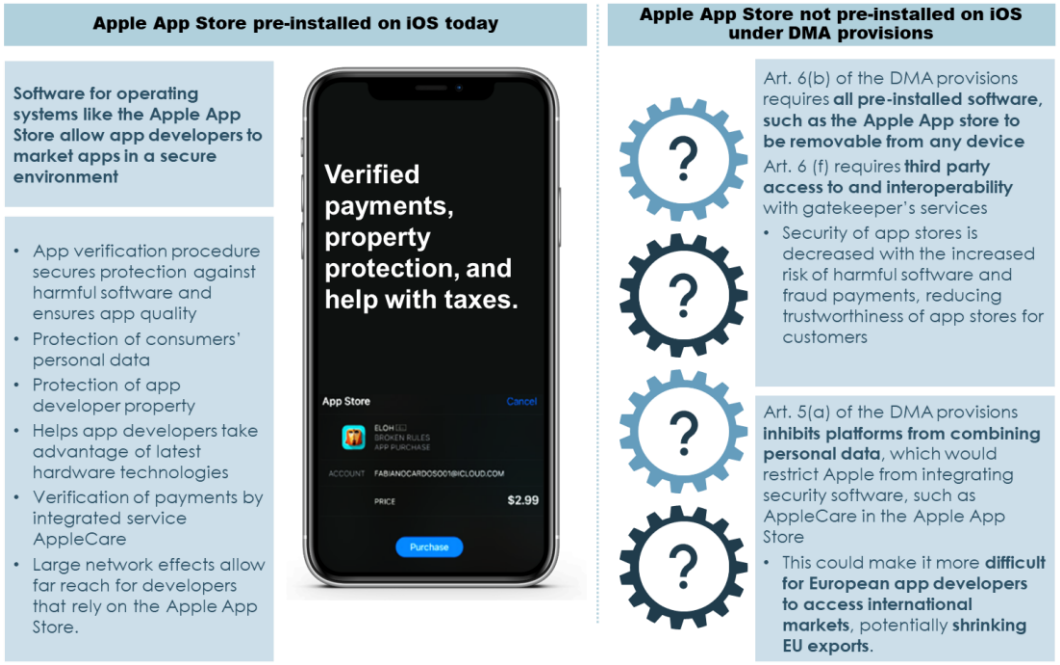
50 Oxera (2021), p. 31-32.
51 "Sandboxing" is used in cybersecurity to run, observe, and analyse code in a safe and isolated environment, see Apple (2021)
52 See for example Google (2021)

Similarly, with the DMA in place, App Store must interoperate with other providers of e.g., payment or security services, meaning that apps displayed in App Store can embed other payment services than Apple's for example (Art. 6(f)).[53] This introduces a risk of fraud payments compared to the situation of full vertical integration with App Store's own payment service today.

Thus, by removing the vertical integration between Operating Systems and software, the interoperability, security, and user trust in app stores like App Store or Google Play (android) may suffer, thereby reducing the app stores' value as a distribution platform for EU-based app developers.[54]

EU produced apps marketed via app stores and downloaded by users outside the EU, are effectively exports. Compared with non-EU app developers that would still have access to vertically integrated app stores, EU app developers may be worse off in relation to competition than they are today, as they may struggle more to reach the same audience. Figure 20 illustrates this example.

Figure 20
Example: Apple App Store, what if?



Note: 1) The Apple App Store is defined in the DMA as an online intermediation service. However, in the context of the provision on operating systems in the DMA, it may harm the quality of services from digital platforms like the Apple App Store.
Source: Copenhagen Economics based on own research, Apple App Store, and the DMA.

In sum, the DMA and its individual provisions can put EU domestic sales and export at risk by reducing the quality of key inputs to EU businesses. In this chapter, we have outlined the underlying economic intuition and illustrated by example how the DMA can potentially and likely will impose a real and negative effect on EU businesses users. More importantly, these *potential* effects are not

53 Article 6f on third party access and interoperability.
54 Oxera (2021) offers another illustrative example of mandated interoperability with the Microsoft operating system Windows, where uncoordinated third-party access worsened the user experience and put the Windows eco-system reputation at risk.

identified nor considered in the IA, pointing to a need for a renewed and more careful examination of individual provisions' potential impact, before adopting this new piece of legislation as it stands.

In conclusion, we find it worthwhile to investigate in greater depth how the DMA proposal may impact the EU's external trade relations as well as the productivity of EU firms. In this study, we point to a few areas from where such a further investigation could depart.

CHAPTER 4

CONCLUSIONS

The EU benefits immensely from a global trading system based on comparative advantages as explicitly recognised in the EU's trade policy agenda. The US is one of the EU's largest trading partners accounting for 18% of EU's exports outside the single market as well as a substantial amount of activity through the establishment of subsidiaries.

The EU benefits from this trading pattern as it allows the EU to expand sales in a number of industries notably pharmaceuticals, machinery, and automotive, where the ability to scale production on a global level is essential to being in the lead and leveraging the inherent high fixed costs of R&D investments. At the same time, trading patterns give EU firms the ability to use digital tools and platform services developed i.e. by US based companies.

The EU's trade relations with the outside world and with the US specifically relies on a mutual understanding of the benefits it provides to all parties. Factors such as mutual recognition of standards, equal treatment of comparable situations and competitive neutrality are essential in this regard.

In this context, we find that the current form of the DMA raises two kinds of risks:

1. Some of the provisions of the DMA may de facto discriminate against firms based in the US
2. EU firms may face reduced productivity and competitiveness as the proposed DMA may impair some of the functionalities of digital platform services that create value for the users

4.1 REGULATORY PERSPECTIVES

The functioning of the global trading system and the ability to leverage comparative advantage is ultimately based on a mutual understanding of the benefits it provides to all partners. Access to high quality/low priced imported products is as essential as being able to export to foreign markets without discrimination vis-à-vis domestic competitors.

Since its establishment, the EU has advocated for free trade, and is now the largest export and import market globally. This has been achieved by many years of continuous development of the EU single market and the EU's external trade agenda, now consisting of 36 major trade agreements with 65 preferential trading partners, contributing EUR 113 billion to EU's trade surplus in 2019.[55] The purpose of these trade agreements is to lower trade frictions between EU and partner countries and to enhance free trade, i.e. to remove barriers to trade. EU trade agreements have had large consumer benefits in the form of lower prices and higher income. As a result of EU's trade agreements, tariff savings for EU households amount to an estimated EUR 60 billion annually.[56] The consumer welfare and wider economic effects of trade agreements go beyond direct tariff savings. For instance, an estimated 36 million jobs are supported by exports, which enjoy a 12% wage premium compared to jobs not supported by trade.[57] Another 16 million jobs in the EU are supported by foreign investments.[58]

The EU communicates commitments to further strengthen its cooperation with trading partners, and especially the US, and to reduce tensions in global trade - as to achieve more sustainable and fair trade and a more competitive and resilient domestic economy. On the area of digital economy, it is expressed that "The EU will also need to step up bilateral engagement and explore stronger frameworks for cooperation on trade-related digital issues with like-minded partners."[59]

Generally, the EU and US trade agenda share similar priorities,[60] but concerning the DMA (and the DSA) both the US foreign trade representative and US industry has expressed concerns about US exports and collaboration across regions. The US foreign trade representative has identified the DSA and the DMA as posing "significant barriers to US exports."[61] The US industry has expressed concerns that the proposed digital regulations of the EU could unfairly target large US-based digital service providers and hamper their ability to support and develop new products for small businesses in the EU, especially if they do not align with respective US policies.[62]

Consequently, it is important to ensure that digital policies are aligned with common standards and regulation of trade. Europe is setting the tone for global digital regulation but should do so in an outward-looking manner. As the forerunner in regulation, the EU can serve as inspiration for US (and global) policymakers. However, any regulation affecting trade should pursue alignment with the standards and regulations pursued by other trading partners, as to ensure minimal barriers and fairness.

In conclusion, we find it worthwhile to investigate in greater depth how the DMA proposal may impact the EU's external trade relations as well as the productivity of EU firms. In this study, we point to a few areas from where such a further investigation could depart, notably by looking at regulatory regimes that combines ex ante conduct regulation with options to depart when a firm can document that benefits outweigh costs.

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55 European Commission (2020) "Report from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the regions on the implementation of EU trade agreements"

56 DG Trade Chief Economist Note (2018) "Consumer benefits from EU trade liberalisation: How much did we save since the Uruguay Round?"

57 DG Trade Chief Economist note (2018)- "How important are EU exports for jobs in the EU?"

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59 European Commission (2021) "Communication on the trade policy review"

60 E.g. promoting digital transformation, strengthening the transatlantic partnership under the new US administration and openness and fair competition while strengthening domestic industry

61 United States Trade Representative (2021b). "2021 National Trade Estimate Report on Foreign Trade Barriers"

62 Congressional Research Service (2021) "EU Digital Policy and International Trade"

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APPENDIX A

MAP OF LIKELY GATEKEEPERS

To conduct the mapping of likely gatekeepers we studied 32 companies based on a list provided in the the Support Study Impact Assessment together with other companies mentioned in the study, see the full list in Table 5. From this list of tech companies we removed all companies that do not meet (i) the financial criteria, (ii) the definition of core platform service, or (iii) has no presence in EU. This left us with a list of 17 likely gatekeepers.

From the reduced list 5 companies with certainty meet all the criteria defining a gatekeeper. This concerns the Big Tech companies, Google, Apple, Facebook, Amazon, and Microsoft (GAFAM) as suggested by Caffarra and Scott Morton (2021). The remaining 12 companies in the list are categorized as potential gatekeepers because they meet both or one of the financial criteria, but based on publicly available information, the number of users is either (i) unknown, (ii) division of end users and business users are unclear, or (iii) impossible to identify monthly activity. User information is identified through the following sources: Finance Yahoo (2021); ipropertymanagement (2021); eDesk (2021); Investor Uber (2021); Variety (2021); SAP (2021)

The gatekeepers and potential gatekeepers are split by geographic origin which illustrates that the largest part of the likely gatekeepers is US-based. To verify that this is not driven by the composition of the sector we have illustrated the country distribution of publicly listed companies in the tech sector. This data is gathered from the Eikon database. They use a market-based approach to classify which sector a company belongs to. That is, companies are assigned to a sector based on the market they serve. Eikon defines the economic sector "technology" based on the industries and activities in Figure 21. Furthermore, the geographic division is determined based on the origin of headquarters.

Table 5
List of companies included in gatekeeper analysis

GATEKEEPER	COMPANY
Yes	Google
Yes	Apple
Yes	FaceBook
Yes	Amazon
Yes	Microsoft
Potential	Booking.com
Potential	Oracle
Potential	SAP
Potential	Airbnb
Potential	Tiktok
Potential	Uber
Potential	Salesforce
Potential	Expedia
Potential	Dailymotion
Potential	IBM
Potential	Zoom
No	Netflix
No	Zalando
No	Slack
No	Schibsted
No	Adobe Inc.
No	Alibaba
No	Allegro
No	Baidu
No	Deliveroo
No	Disney
No	Spotify
No	Tencent
No	Pinterest
No	Twitter
No	Shopify

Note: Selected companies are based on IA, classification is CE analysis based on sources below
Source: Support Study Impact assessment; Finance Yahoo (2021); ipropertymanagement (2021); eDesk (2021); Investor Uber (2021); Variety (2021); SAP (2021); Caffarra and Scott Morton (2021); Company websites;

Figure 21
Definition of Economic Sector

Economic Sector	Business Sector	Industry group	Industry	Activity
Technology	Technology equipment	Semiconductors and semiconductor equipment	Semiconductors	Semiconductors (NEC)
				Integrated circuits
				Memory chips (RAM)
				Processors
				Semiconductor wholesale
				NFC and RFID systems
			Semiconductor equipment and testing	Semiconductor equipment and testing (NEC)
				Semiconductor machinery manufacturing
				Semiconductor testing equipment and service
				Semiconductor equipment wholesale
		Communications and networking	Communications and networking	Communications and networking (NEC)
				Network equipment
				Security and surveillance
				Conferencing tools and systems
				VOIP equipment and systems
				Broadcasting equipment
				Satellite communications network
				Fiber optic cable manufacturing
		Electronic equipment and parts	Electronic equipment and parts	Electronic equipment and parts (NEC)
				Biometric products
				Advanced electronic equipment
				Display screens
				Electronic components
				3D Printers
		Office equipment	Office equipment	Office equipment (NEC)
				Commercial document management
				Office technology equipment
				Point of sale systems
				Scientific and precision equipment
				Office equipment wholesale

Economic Sector	Business Sector	Industry group	Industry	Activity
Technology	Technology equipment	Computers, phones and household electronics	Computer hardware	Computer hardware (NEC)
				Scientific and super computers
				Laptop and desktop computers
				Tablet and netbook computers
				Input devices
				Computer peripherals
				Servers and systems
				Storage devices
				Computer hardware component assembly
				Consumer document management
			Phones and handheld devices	Phones and handheld devices (NEC)
				Phones and smart phones
				Portable satellite navigation
				Personal music players
				Electronic books
				Mobile device component assembly
			Household electronics	Household electronics (NEC)
				Photographic equipment
				TV and video
				Home audio
				Consumer electronic wholesale
		Integrated hardware and software	Integrated hardware and software	Integrated hardware and software

Source: Eikon

APPENDIX B

A FULL LIST OF POSSIBLE DMA IMPACTS ON DIGITAL PLATFORM SERVICES AND BUSINESS USERS

On the next pages, we provide a full list of potential impacts of the individual provisions of the DMA across all eight core platform services for

i) EU businesses as *users of digital platform services*. This could for example be EU businesses using cloud services as inputs, e.g., for computing processes, in their operation, instead of using local computing power from a local data centre.

ii) EU businesses as *sellers through digital platform services*. For example, EU businesses may use digital platform services, such as social media platforms, to promote their products to sell to domestic customers and customers abroad.

Combining these dimensions provides 288 *potential individual impact*[63] entries to examine (illustrated in the two columns to the right) in a thorough impact assessment, cf. Table C.1.

[63] Based on 18 provisions, 8 platform services and 2 groups of impact (18 times 8 times 2 equals 288).

Table C.1

Impact research roadmap, broader *potential* business potential impacts of DMA

Colouring scheme of table: Grey: no clear impact channel, amber: some expected negative impact, red: expected negative impact.

	Overall DMA scope across all CPS		***Individual assessment for each of the 8 CPS (16 columns in total)***	
Side of the market -->	Business as: buyer/user/ viewer/recipient	Business as: seller/provider/ creator/sender	*Business as: buyer/user/ viewer/ Recipient of platform service* **x**	*Business as: seller/provider/ creator/sender*
DMA provision				
Article 5: In respect of each of its core platform services identified pursuant to Article 3(7), a gatekeeper shall:			*to be analysed in IA*	*to be analysed in IA*
a) refrain from combining personal data sourced from these core platform services with personal data from any other services offered by the gatekeeper or with personal data from third-party services, and from signing in end users to other services of the gatekeeper in order to combine personal data, unless the end user has been presented with the specific choice and provided consent in the sense of Regulation (EU) 2016/679	Risk of higher prices and/or poorer quality Loss of integration across digital platform services	Poorer matching between sellers and buyers	…	…
b) allow business users to offer the same products or services to end users through third party online intermediation services at prices or conditions that are different from those offered through the online intermediation services of the gatekeeper			…	…
c) allow business users to promote offers to end users acquired via the core platform service, and to conclude contracts with these end users regardless of whether for that purpose they use the core platform services of the gatekeeper or not, and allow end users to access and use, through the core platform services of the gatekeeper, content, subscriptions, features or other items by using the software application of a business user, where these items have been acquired by the end users from the relevant business user without using the core platform services of the gatekeeper	Fraud risks and loss of security	Businesses with lower brand/ consumer contact "overtaken" by those with stronger brand/contact	…	…
d) refrain from preventing or restricting business users from raising issues with any relevant public authority relating to any practice of gatekeepers			…	…

e) refrain from requiring business users to use, offer or interoperate with an identification service of the gatekeeper in the context of services offered by the business users using the core platform services of that gatekeeper	Productivity, convenience, time spent		…	…
f) refrain from requiring business users or end users to subscribe to or register with any other core platform services identified pursuant to Article 3 or which meets the thresholds in Article 3(2)(b) as a condition to access, sign up or register to any of their core platform services identified pursuant to that Article	Depending on impacts on design choices, value of using integrated services/apps		…	…
g) provide advertisers and publishers to which it supplies advertising services, upon their request, with information concerning the price paid by the advertiser and publisher, as well as the amount or remuneration paid to the publisher, for the publishing of a given ad and for each of the relevant advertising services provided by the gatekeeper		Depending on impacts on design choices, quality/price of advertising services	…	…
Article 6: In respect of each of its core platform services identified pursuant to Article 3(7), a gatekeeper shall:			*to be analysed in IA*	*to be analysed in IA*
a) refrain from using, in competition with business users, any data not publicly available, which is generated through activities by those business users, including by the end users of these business users, of its core platform services or provided by those business users of its core platform services or by the end users of these business users	Depending on implementation, ability / efficiency of CPS scale and productivity, convenience, value of using CPS	Depending on implementation, ability / efficiency of CPS scale and service quality available to small business users	…	…
b) allow end users to un-install any pre-installed software applications on its core platform service without prejudice to the possibility for a gatekeeper to restrict such un-installation in relation to software applications that are essential for the functioning of the operating system or of the device and which cannot technically be offered on a standalone basis by third-parties	Productivity, convenience, value of using integrated services/apps Fraud risks and loss of security		…	…
c) allow the installation and effective use of third party software applications or software application stores using, or interoperating with, operating systems of that gatekeeper and allow these software applications or software application stores to be accessed by means other than the core platform services of that gatekeeper. The gatekeeper shall not be prevented from taking proportionate measures to ensure that third party software applications or software application stores do not endanger the integrity of the hardware or operating system provided by the gatekeeper			…	…

d) refrain from treating more favourably in ranking services and products offered by the gatekeeper itself or by any third party belonging to the same undertaking compared to similar services or products of third party and apply fair and non-discriminatory conditions to such ranking	Depending on impacts on design choices, usability and convenience of CPS		…	…
e) refrain from technically restricting the ability of end users to switch between and subscribe to different software applications and services to be accessed using the operating system of the gatekeeper, including as regards the choice of Internet access provider for end users			…	…
f) allow business users and providers of ancillary services access to and interoperability with the same operating system, hardware or software features that are available or used in the provision by the gatekeeper of any ancillary services			…	…
g) provide advertisers and publishers, upon their request and free of charge, with access to the performance measuring tools of the gatekeeper and the information necessary for advertisers and publishers to carry out their own independent verification of the ad inventory			…	…
h) provide effective portability of data generated through the activity of a business user or end user and shall, in particular, provide tools for end users to facilitate the exercise of data portability, in line with Regulation EU 2016/679, including by the provision of continuous and real-time access			…	…
i) provide business users, or third parties authorised by a business user, free of charge, with effective, high-quality, continuous and real-time access and use of aggregated or non-aggregated data, that is provided for or generated in the context of the use of the relevant core platform services by those business users and the end users engaging with the products or services provided by those business users; for personal data, provide access and use only where directly connected with the use effectuated by the end user in respect of the products or services offered by the relevant business user through the relevant core platform service, and when the end user opts in to such sharing with a consent in the sense of the Regulation (EU) 2016/679			…	…

j) provide to any third party providers of online search engines, upon their request, with access on fair, reasonable and non-discriminatory terms to ranking, query, click and view data in relation to free and paid search generated by end users on online search engines of the gatekeeper, subject to anonymisation for the query, click and view data that constitutes personal data			…	…
k) apply fair and non-discriminatory general conditions of access for business users to its software application store designated pursuant to Article 3 of this Regulation			…	…

Source: Copenhagen Economics based on DMA p. 39-41 and own analysis.

ABOUT COPENHAGEN ECONOMICS

Copenhagen Economics is a specialised economics consultancy and leader in the Nordic region. Our economists provide advice and analyses in the fields of competition, regulation, international trade and impact assessment.

We solve complex problems for private- and public-sector clients in the areas of:

We provide hard facts and clear stories, enabling our clients and their stakeholders to make superior decisions based on sound analysis.

We advise companies, authorities and policy makers when market meets regulation and conflicts arise. We help our private sector clients handle conflict cases and guide them on how to prosper through regulatory management. We help our public sector clients evaluate and devise new regulation. We support the judiciary process as court-appointed or party-appointed experts.

In particular, in the area of digital economy, our company has worked on a broad set of research questions of socio-economic importance for a range of public authorities, industry associations, as well as firms across the digital space – starting with a seminal contribution on the value of the EU Digital Single Market nearly a decade ago.

Founded in 2000, the firm is based in offices in Brussels, Copenhagen, Helsinki and Stockholm and

- is independent and partner-owned
- counts more than 90 employees, mostly with Ph.D. or M.Sc. in Economics
- includes economists from various nationalities / languages: Danish, Dutch, English, Finnish, French, German, Hungarian, Italian, Lithuanian, Norwegian, Portuguese, Romanian, Spanish, Swedish
- and operates across the world.

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