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Is the Proposed Digital Markets Act the Cure for Europe's Platform Ills? Evidence from the European Commission's Impact Assessment

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Is the Proposed Digital Markets Act the Cure for Europe's Platform Ills? Evidence from the European Commission's Impact Assessment

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Executive Summary

The Digital Markets Act (DMA), and the current reconsideration of competition policy in the digital era, provide an opportunity to diagnose accurately the issues with platforms and competition in the digital sector, and to correct shortcomings caused by years of prioritising static competition over dynamic competition. A DMA that fails to do so will cause harmful side-effects not only on digital commerce but on the European Union (EU) economy more broadly.

The DMA's architects seem to believe that European competition laws have proven inadequate. Competition laws can undoubtedly be improved, but little will fundamentally change until the methodology of competition economics employed in Europe, North America, and elsewhere prioritises innovation and dynamic competition and understands the power of innovation-driven competition. This shortcoming of modern competition economics needs to be remedied. The DMA Impact Assessment (IA) is illustrative. Lacking familiarity with dynamic competition concepts, the IA relies on industrial era tools for static competitive analysis. This causes the IA to significantly overestimate the likely positive effects of the DMA, and significantly underestimate the likely negatives.

An economic assessment of the DMA ought to begin with an analysis of the European digital economy. It should identify areas where high prices, low quality, reduced output, or a lack of innovation are symptomatic, and explain how a lack of competition has caused these ills. It would then show how the DMA's obligations are a proportionate prescriptive remedy to address Europe's ills.

The IA does not do this. Instead, the problematic symptom it identifies is that there are a handful of highly innovative technology firms which offer a wide range of popular digital products and services. As if these were oil or steel companies, it correlates market concentration with a lack of competition, and assumes that harm will necessarily flow in the future. What is purported to be diagnosed is a series of digital platforms immune from competition at their core services, requiring policymakers to add another layer of regulation to create competition on the fringes. Instead of allowing for dynamic competition to continue between platforms, the DMA would reinforce existing market structures with regulation, ossify market boundaries, and stunt innovation in Europe.

[1] Prepared for the Computer & Communications Industry Association.

The reality is that in the digital sector, marginal costs are low, network effects can create positive and negative feedback loops, and innovation-driven competition leads to the constant obliteration and redefinition of market boundaries. Only the paranoid survive, because a rival's innovation can cause market dynamics to change significantly. Large technology firms competing in the EU are not monopolists enjoying an easy life; they are themselves facing brutal competitive battles fought using new digital technologies to develop new services that address ever evolving business and consumer needs. They are not resting on their laurels but rather investing very considerable resources annually in R&D to improve not only their core platform services, but to stimulate competition in their ecosystems as well. Consumers, business users, and many others gain enormously from these efforts, as can be easily seen by comparing the functionality provided by current products and services available to consumers to those available even only a few years ago. Given its basis in industrial-era models of competition, the Impact Assessment openly struggles to address these realities. Instead, to come to a positive prognosis, the IA makes a series of questionable, conclusory, and unsubstantiated assumptions:

- The DMA will cause R&D spending in the information and communication technology sectors of each Member State to double, with related increases in employment;
- Because of the DMA, a significant amount of spending on M&A activity by large technology companies will be replaced by R&D spending on a one-for-one basis;
- These increases in R&D spending generated by the DMA will be as socially beneficial and value augmenting to users as previous forms of R&D spending;
- The DMA's obligations are narrowly targeted such that they will have no negative effect for users with respect to costs, quality, or functionality of core platform services today or in the future;
- Competition "in the market" is more beneficial than competition "for the market" and that regulatory interventions to cause a change in the nature of competition in the digital sector will only involve minimal compliance costs and no harmful side-effects on innovation or competitive incentives;
- The DMA will reduce regulatory fragmentation caused by diverging national approaches to platforms, but in its absence 100% of cross-border trade intermediated by on-line marketplaces would be lost by 2025; and
- All of these benefits can be achieved with only 30-90 Commission employees, and no other enforcement costs at EU institutional level.

Surprisingly, the IA does not evaluate the economic impact of the specific prohibitions or obligations of the DMA. Of course, a balanced assessment of the provisions of the DMA would make clear that it is likely to have a chilling effect on R&D and innovation. This is basic economics. The DMA requirements encourage free riding on the investments of others, and this discourages parties from making those investments. Europe's innovative potential is better secured through autonomous development of dynamic capabilities. The requirements for data sharing/licensing embedded in the DMA, for example, will not only cripple incentives to deploy services developed elsewhere to business users or consumers in Europe, but it will likely blunt innovation-based dynamic competition in Europe. This harm to innovation is harm to the most precious of all types of economic activity. This is because innovation delivers large positive

spill-over benefits; it generates social returns higher than private returns, and drives productivity, employment, wages, and prosperity to higher levels than other forms of investment. In short, there is good reason to think that the overall impact of the DMA will be negative and substantial. For regulation as experimental as the proposed DMA, policymakers deserve a transparent assessment of the likely costs, and an honest appraisal of the potential benefits. The DMA's Impact Assessment falls short.

Any study that assumes its own conclusions… as does the EC's Impact Assessment… is necessarily suspect. The DMA, and the future of competition policy in the digital era, ought to be an opportunity to get the diagnosis right and make up for the shortcomings caused by years of prioritising static competition and neglecting dynamic competition. A DMA that fails to do so could be a prescription that causes more harm than good, with adverse side-effects not only on digital commerce but on the European economy more broadly. The shortcomings of the Impact Assessment are inviting Europe to sleepwalk into a future it doesn't really want. French politician/statesman/writer Jean-Jacques Servan-Schreiber observed 54 years ago that what Europe really needs is "the ability to transform an idea into reality through... the talent for coordinating skills and making rigid organizations flexible."[2] This remains true today.

I. Introduction

In December 2020, the European Commission (EC) presented its Digital Markets Act (DMA) legislative proposal. According to the EC, the DMA addresses several perceived ills: "*inefficient outcomes in the digital sector in terms of higher prices, lower quality, as well as less choice and innovation to the detriment of European consumers.*"[3] These purported ills stem from a certain mindset from the context of industrial markets: concentration is bad for consumers, and choice – meaning a large number of substitutable suppliers competing against each other– leads to lower prices and innovation.

To increase choice and remedy perceived ills, the DMA calls for far-reaching changes to the way economic activity can or will occur in digital markets. Its provisions are aimed at increasing choice, fairness, and contestability in an effort to improve consumer welfare.[4] To show the benefits of the DMA proposals, the EC quantified the expected effects in a formal Impact Assessment which was also published in December. The Impact Assessment accepts the EC's

[2] Servan-Schreiber, Jean-Jacques, "Le Défi Américain" 1967, p. 65.

[3] DMA Proposal, p.1

[4] We note that the EC Regulatory Scrutiny Board criticised the Impact Assessment's lack of evidence in this respect. "Regulatory Scrutiny Board Opinion", Proposal for a Regulation of the European Parliament and of the Council on contestable and fair markets in the digital sector (Digital Markets Act), European Commission, p. 2, available at https://digital-strategy.ec.europa.eu/en/library/impact-assessment-digital-markets-act. ("It should more convincingly demonstrate for each of the selected core platform services that the identified weak contestability has negative effects in terms of higher mark-ups, lower quality of service, or reduced innovation.")

diagnosis, considers the possible side-effects of the DMA as prescribed, and predicts a healthy future.

In this paper, we evaluate the EC's Impact Assessment in order to provide a "second opinion". Our goal is not to support or encourage policymakers to accept or reject any of the specific policy proposals in the DMA. Indeed, we do not focus in detail on the effects of any of the specific obligations in the DMA. Rather, we note that the DMA calls for far-reaching changes in the conduct of economic activity in digital markets. Before such far-reaching remedies are administered, it is critical to assess their impacts on individual markets, on the digital sector more broadly, and on the overall European economy. Will the proposed remedy heal or exacerbate the underlying problems identified by the EC? We find that the EC's diagnosis is based on industrial era economic tools and assumptions ill-suited for the realities of today's digital, innovation-driven competitive marketplaces.

The fields of economics, strategic management, and entrepreneurship have advanced our understanding of the management and the economics of innovation in many ways. These disciplines, along with others, can help our understanding of innovation and digital competition, allowing one to diagnose potential concerns and analyse potential remedies. If market or competition concerns are misdiagnosed, the remedy prescribed is not likely to cure the problem and may end up causing significant and harmful side-effects for the European economy.

In 1942 Joseph Schumpeter characterized innovation-driven competition as coming "*from the new commodity, the new technology, the new source of supply, the new type of organization … competition which … strikes not at the margins of the profits and the outputs of the existing firms but at their foundations and their very lives. This kind of competition is as much more effective than the other as a bombardment is in comparison with forcing a door."*[5] In short, Schumpeter was reminding us of the obvious: innovation driven competition is the strongest and most galvanizing form of competition. Innovation-driven competition redefines markets and animates the competitive process. It has come to characterise competition in the digital sector of most advanced economies. Competition not animated by innovation is weak tea in comparison. However, it is this weak tea which the DMA is promoting.

Economists have long recognised the importance of innovation for economic advancement, growth, and increases in per capita income. Innovation can take many forms. One can identify "core", fundamental, or systemic innovation;[6] and peripheral, add-on innovation. Innovation can result in cost reductions or improving the existing products or services available to consumers. It can also lead to the development of new products and services, and the combination of assets in new ways to meet consumer demand using innovative new business models. Innovation driven by competition can create significant benefits, but competition driven by innovation can

[5] Schumpeter, Joseph A., Capitalism, Socialism, and Democracy, Taylor & Francis, 2003, pp. 84 – 85, first published in 1942 by Harper & Brothers.

[6] See Teece, David J., "Systemic Innovation," Chapter in Palgrave Encyclopedia of Strategic Management, Augier, Mie, and David J. Teece (eds.), Palgrave MacMillan, 2014.

redefine entire markets and invigorate entire sectors of the economy. The automobile did not just replace horse-drawn carriages, it redefined cities.

Search engines, online marketplaces, social networking services, media-sharing platform services, interpersonal communication services, and many other platform services bear little resemblance now to the services they were just a few short years ago. They are responsive to voice commands, optimized for mobile, flooded with features and functionalities, and they continue to evolve. In order to impact the status quo, innovating firms accept high risk and uncertain payoffs, often far into the future.

Businesses that innovate can completely overturn existing market structures and redefine historic market boundaries. The emergence of turbine jet engines completely overturned the structure of the civilian passenger aircraft industry; autonomous cars are likewise likely to upset the structure of the automobile industry, just as the entertainment industry has been upset by Spotify, Netflix, Amazon, and others. While innovation can dramatically cramp incumbents unwilling to adapt (e.g., Kodak and digital film), in other cases incumbents appear to adapt successfully (e.g., Disney+).

Instead of focusing on and prioritising this kind of dynamic, innovation-based competition, the Impact Assessment, through its quantification of costs and benefits, and its associated assumptions, reveals a preference for industrial-era static competition, where the benefits of network effects, big data, and extreme economies of scale and scope, are lost. This can be seen in many aspects of the Impact Assessment's analysis.

First, the Impact Assessment assumes that the business models utilized by platforms and the functionality and cost of the services available from platforms in the EU will be unchanged by the DMA. This is a static view of the world, where the products and services available in the market are taken as a given instead of being responsive to policy and market factors.

Second, the Impact Assessment focuses on redirecting or channelling competition from being "for" the market to being "in" the market. This devalues innovation-based competition leading to new products and services, and potentially to new markets, even though innovation-based competition offers the potential for significantly greater welfare gains than static competition.

Third, the analytical techniques used in the Impact Assessment are inherently static in nature. An example is the Input-Output model used to estimate the impact of the DMA on GDP growth and employment. Growth is modelled as resulting from R&D spending, not from innovation that flows from R&D spending leading to new or improved products and services and from cost reductions. Rather, GDP and employment growth result from assumed increases in spending on employee programmers and related personnel.

Fourth, the Impact Assessment makes no effort to evaluate the effects of any specific proposals included in the DMA on incentives to invest in R&D or on the magnitude or type of R&D spending that will occur. Rather, the Impact Assessment's modelling includes assumptions that R&D spending will increase.

Fifth, R&D spending is evaluated in the Impact Assessment not as being driven by research opportunities and the perceived value of R&D investments but rather by the funds left over after completing M&A activity.

Sixth, ecosystems are not evaluated as systems where a change in one area can result in changes in other areas. Rather, a change in one part of an ecosystem is assumed not to have effects on other parts of the ecosystem, with no repercussions or side-effects.

Lastly, the Impact Assessment assumes significant gains from reducing regulatory fragmentation caused by varying national legislation to regulate or otherwise address platforms. However, the provisions of the DMA do little to prevent such regulatory fragmentation, and indeed fragmentation on the grounds of national competition law is expressly permitted.

Undoubtedly, economists and others have a great deal more to learn about innovation, but the overall 800+ pages of the Impact Assessment does not use the rather wide body of existing research on the nature of innovation and how to analyse innovation, and what types of policies promote or reduce it and its associated spillovers. It even ignores the lessons taught by the many expert reports on competition policy in the digital era commissioned by national authorities. This risks harmful side-effects for innovation in the European digital sector and will only make Europe less competitive.

The social value of innovation far outstrips the value of innovative activity to individual consumers or businesses.[7] As such, policies that inhibit innovation or redirect or channel innovation into less productive, marginal areas can have substantial adverse impacts on consumers and overall economic performance. Furthermore, reduced systemic innovation results in reduced follow-on or add-on innovation and autonomous innovation too. Given this, a policy recommendation that disfavours systemic innovation in favour of edge or add-on (modular) innovation may not even result in additional edge innovation if innovation of a systemic nature stalls. Unfortunately, this appears likely under the regulatory regime the DMA proposes to impose designated gatekeepers. For regulation as experimental as the proposed DMA, policymakers deserve a transparent assessment of the likely costs, and an honest appraisal of the potential benefits. The DMA's Impact Assessment falls short.

In what follows, we look at the key pillars supporting the DMA Impact Assessment's overall conclusions. These pillars are the expected beneficial effects of the DMA on GDP growth, employment, innovation, benefits from investment in R&D, consumer surplus, competition, and cross-border trade. We also assess the costs considered and estimated as part of the Impact Assessment's analysis, which are limited to the enforcement costs for regulators and administrative costs for digital platforms. We also describe some of the other costs, not

[7] See, for example, the discussion of the comparison of individual returns and social returns from innovation in Teece, David J., "The 'Tragedy of the Anticommons' Fallacy: A Law and Economics Analysis of Patent Thickets and FRAND Licensing," *Berkeley Technology Law Journal*, Vol. 32, 2017, pp. 1489 – 1526, at pp. 1516 – 1525, available at https://doi.org/10.15779/Z38RR1PM7N. See also Lucking, Brian, Nicholas Bloom and John van Reenen, "Have R&D Spillovers Declined in the 21st Century?" *Fiscal Studies,* Vol. 40, No. 4, 2019, pp. 561–590, available at https://nbloom.people.stanford.edu/sites/g/files/sbiybj4746/f/rndspillovers.pdf.

assessed by the Impact Assessment, that necessarily flow from a more dynamic assessment and an understanding of how innovation-based competition works in digital markets. We conclude with some limited recommendations on how the DMA can be improved to preserve value generating innovation-based competition in the European digital economy.

II. Background: Static and Dynamic Competition

We discuss the details of the Impact Assessment's analysis of the effects of the DMA on specific areas such as GDP growth below. Before the specifics, however, we note the differences between static and dynamic competition analysis, and the focus of the Impact Assessment on static analysis.

Dynamic competition is a type of competition centred on innovation.[8] It results in Joseph Schumpeter's "gale of creative destruction", a "process of industrial mutation…that incessantly revolutionizes the economic structure from within, incessantly destroying the old one, incessantly creating a new one."[9] It involves new products and services, new means of delivering services to consumers, new business models to combine assets in different ways, and new production techniques.[10] Such innovation competition can come directly or indirectly from entities active in an industry or in an adjacent one, and it can also come from entirely unexpected entrants, including new businesses.[11] Just as competition is often and quite

[8] For discussions of dynamic competition, see Teece, David J., "Innovation, Governance, And Capabilities: Implications for Competition Policy. A Tribute to Nobel Laureate Oliver Williamson by his Colleague and Mentee David J. Teece", *Industrial and Corporate Change*, October 2020, pp. 1075 – 1099; Teece, David J., "Next Generation Competition: New Concepts for Understanding How Innovation Shapes Competition and Policy in the Digital Economy", *Journal of Law, Economics and Policy,* Vol. 9, Fall 2012; Teece, David J. and J. Gregory Sidak, "Dynamic Competition in Antitrust Law", *Journal of Competition Law & Economics,* Vol. 5, No. 4, December 2009, pp. 581–631; Teece, David J. and Christopher Pleatsikas, "The Analysis of Market Definition and Market Power in the Context of Rapid Innovation", *International Journal of Industrial Organization,* Vol. 19, No. 5, April 2001, pp. 665 – 693; Teece, David J. and Mary Coleman, "The Meaning of Monopoly: Antitrust Analysis in High-Technology Industries", *The Antitrust Bulletin,* Vol. 43, No. 3/4, Fall–Winter 1998, pp. 801 – 857; Teece, David J. and Nicolas Petit, "Big Tech, Big Data, and Competition Policy", Working Paper, March 2021; Teece, David J., "Profiting from Innovation in the Digital Economy" *Research Policy,* Vol. 47, No. 8, October 2018, pp. 1367 – 1387; and Teece, David J., "Dynamic capabilities and entrepreneurial management in large organizations: Toward a theory of the (entrepreneurial) firm", *European Economic Review,* Vol. 86, July 2016, pp. 202-216.

[9] Schumpeter, Joseph A., Capitalism, Socialism, and Democracy, Taylor & Francis, 2003, pp. 83 – 84, first published in 1942 by Harper & Brothers.

[10] Ellig, Jerry and Daniel Lin, "A Taxonomy of Dynamic Competition Theories," Chapter 1 in Dynamic Competition and Public Policy - Technology, Innovation, and Antitrust Issues, Ellig, Jerry (ed.), Cambridge University Press, 2001, p. 18.

[11] Petit, Nicolas and David J. Teece, "Big Tech, Big Data, and Competition Policy: Favoring Dynamic Over Static Competition," Working Paper, March 2021, pp. 4 – 5, available at https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3229180.

properly recognised as promoting innovation,[12] so too does innovation promote competition via the development of new products and services, and the development of new processes. Some innovations are efficiency driven, generating price reductions and offering improved value to consumers. Other innovations improve productivity and wage rates.[13] The most value generating innovations fundamentally alter markets and the nature of supply and demand.

General purpose technologies like the Internet, and before it the steam engine, semiconductors and computers play a key role in innovation. Such technologies enable innovation, leading to quantum leaps yielding countless positive externalities. They can be used as inputs by many downstream sectors. They present inherent potential for technical improvements. And they bring about new product and service complementarities. Given their wide benefits, extra care should be paid to avoid stifling incentives of entrepreneurs (i) to unpack the economic opportunities arising from enabling technologies, and (ii) to invest in the discovery of new general-purpose technologies.

Competition enforcement has generally placed little weight on dynamic competition and instead focused on short-run competition in an environment of static markets. By this, we mean that the markets considered are those for existing products or services. The competition that is valued and prioritised is typically price competition among these products or services, though at times competition may be based on some other variable, such as output or capacity. Under a static view of competition there is no fundamental change to the products or services offered. The technologies available to firms are assumed to be fixed. Future innovation driven changes in markets, or possibly even market redefining innovations and the potential development of entirely new markets, play only a peripheral role in the analysis.[14] The economic analysis considered is based around a policy goal of maximizing (short term) consumer welfare by

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[12] For example, the Commission's horizontal merger guidelines state:

> "Effective competition brings benefits to consumers, such as low prices, high quality products, a wide selection of goods and services, and innovation. Through its control of mergers, the Commission prevents mergers that would be likely to deprive customers of these benefits by significantly increasing the market power of firms. By 'increased market power' is meant the ability of one or more firms to profitably increase prices, reduce output, choice or quality of goods and services, diminish innovation, or otherwise influence parameters of competition."

"Guidelines on the assessment of horizontal mergers under the Council Regulation on the control of concentrations between undertakings," Official Journal of the European Union, February 2, 2004, ¶ 8 (emphasis added), available at https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52004XC0205(02)&from=EN.

[13] For a recent discussion of static and dynamic competition in the context of the digital economy, see Petit, Nicolas and David J. Teece, "Big Tech, Big Data, and Competition Policy: Favoring Dynamic Over Static Competition, Working Paper, March 2021, available at https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3229180.

[14] Petit, Nicolas and David J. Teece, "Big Tech, Big Data, and Competition Policy: Favoring Dynamic Over Static Competition," Working Paper, March 2021, pp. 6 – 10, available at https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3229180.

minimizing the deadweight loss imposed by an exercise of market power via short-run restrictions in output.

At its core, good competition policy is about maintaining rivalry in the economy by protecting the competitive process. There may be few markets where the leading, primary, or perhaps even the only type of competition is static, short-run competition on price. These instances are usually where market boundaries are clearly defined, where demand is met by products and services that are near perfect substitutes, where firms primarily generate profits by lowering marginal costs, and where a large market share and barriers to entry confer market power.[15] These assumptions do not hold in the digital economy. Economic tools and models designed for the industrial era have caused both false positives, and false negatives.[16] Continuing to use these same models risks further errors, especially in markets where dynamic competition is much more important than static competition. These markets are almost always the ones producing the most dramatic consumer benefits, as well as benefits to the whole economy. Updating competition rules without updating the tools of competitive assessment risks causing more harm than good.

These shortcomings were identified in a 2019 report published by the European Commission on how competition policy should evolve to address market realities of the digital sector.[17] This report explored ways in which competition authorities can protect competition for the market, which was identified as necessary to provide incentives to supply goods and services at reasonable conditions and to innovate. Dynamic, innovation-driven competition to redefine and capture new markets is characteristic of the kind of competition for the market that the EC's experts recommended prioritising.

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[15] Jenny, Frederic, "Competition Law and Digital Ecosystems: Learning to Walk Before We Run", 20 January 2021, p. 3, available at https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3776274.

[16] *See e.g.,* Crémer, Jacques, Yves-Alexandre de Montjoye and Heike Schweitzer, "Competition Policy for the Digital Era", European Commission, 2019, p. 46, available at https://ec.europa.eu/competition/publications/reports/kd0419345enn.pdf ("it should be remembered that the importance of market definition, and the methodologies developed for identifying it, were built for standard goods and services. In the digital world, it is less clear that we can identify well-defined markets."); Furman, Jason, Diane Coyle, Amelia Fletcher, Derek McAuley, Philip Marsden "Unlocking digital competition: Report of the Digital Competition Expert Panel", March 2019, p. 89, available at https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/785547/unlocking_digital_competition_furman_review_web.pdf ("A number of practical challenges are posed by digital business models for the analytical tools used by competition authorities"). *See also* "A new competition framework for the digital economy", Commission 'Competition Law 4.0', Federal Ministry of Economic Affairs and Energy (BMWi) Germany, September 2019, p. 25, available at https://www.bmwi.de/Redaktion/EN/Publikationen/Wirtschaft/a-new-competition-framework-for-the-digital-economy.pdf; "Stigler Committee on Digital Platforms: Market Structure and Antitrust Subcommittee", George J. Stigler Center for the Study of the Economy and the State, The University of Chicago Booth School of Business, July 2019, p. 31 available at https://www.publicknowledge.org/wp-content/uploads/2019/09/Stigler-Committee-on-Digital-Platforms-Final-Report.pdf.

[17] Crémer, Jacques, Yves-Alexandre de Montjoye and Heike Schweitzer, "Competition Policy for the Digital Era", European Commission, 2019, available at https://ec.europa.eu/competition/publications/reports/kd0419345enn.pdf.

We note at the outset that the models used by the Impact Assessment are inherently static and do not – and cannot – model the effects of policy changes on innovation or assess the effects of innovation on broader aspects of economic performance. The Impact Assessment's analysis of GDP growth and employment changes is itself an example of how static analysis and models are used when a dynamic perspective is necessary: the model used in the Impact Assessment is based on a fixed set of relationships in the overall economy. These relationships are impervious to issues associated with dynamic competition such as the introduction of new products or services, improvements in existing products or services, or cost reductions. Simply put, the underlying mechanics and technology underpinning the economy are assumed to be fixed; the "equation" is set, described via a series of "coefficients" or ratios, and these ratios do not change. Technological advances that would fundamentally alter these ratios, like market redefining product innovations, are not considered or accounted for. Incentives to generate them are ignored. The Impact Assessment does not model the effects of the DMA on the drivers of R&D spending, entrepreneurship, new firm creation, or innovative activity, and it fails to assess economic improvements or detriments flowing from changes in innovation. In that sense, the Impact Assessment is inherently static.

Static economic analysis was perhaps forgivable when assessing competition in mature industrial era industries like the automotive industry and the steel industry where tangible assets were more important than intangibles,[18] intellectual property, and the collection and use of data. In the digital economy, a dynamic economic assessment is necessary.

Applied to the DMA, the implication is that the Impact Assessment needs to consider the effects of the proposed policies on dynamic competition in the digital economy. This requires an assessment of costs and benefits that takes into account firms' abilities and incentives to engage in dynamic competition, R&D spending, the nature of the innovation, and the impacts on value generation for consumers and business users alike. Unfortunately, the Impact Assessment does not do this.

III. The Costs and Benefits Considered in the Impact Assessment

A. Introduction

The Impact Assessment explains that the practices the DMA is intended to address relate to the following core platform services: e-commerce marketplaces, online search engines, app stores, social networks, video-sharing services, operating systems, cloud, number-independent messaging services, and online advertising. The Impact Assessment states that the negative effects the DMA is intended to address are most severe in relation to these core platform services[19] and indicates that "[t]he measures under consideration are the most effective in increasing market contestability and can be expected to contribute to lower prices for business

[18] See Teece, David J., "Intangible Assets and Theory of Heterogeneous Firms," Chapter 9 in Intangibles, Market Failure and Innovation Performance, Bounfour, Ahmed and Tsutoma Miyagama (eds.), Springer International Publishing, 2015.

[19] Impact Assessment Part 1, ¶ 50.

users due to increased competitive pressure". It also states that, by "promoting switching … [the DMA] can enhance competition and contribute to dynamic patterns of innovation."[20]

A meaningful cost/benefit assessment of any policy requires the consideration of both the expected costs and the expected benefits likely to result from the implementation of that policy relative to a baseline scenario. As described by the EC on preparing impact assessments:

> At the end of this process, policymakers should know to what extent different policy options would meet their objectives, with what benefits, at what cost, with what implications for different stakeholders, and at what risk of unintended consequences.[21]

Of course, costs and benefits cannot be assessed, balanced, compared, or weighed if the costs and benefits considered are incomplete or the baseline scenario against which those costs and benefits are measured is unrealistic; nor can implications for different stakeholders and unintended consequences be assessed if important potential costs are not included in the analysis. As an extreme example, an analysis that largely ignores costs and focuses largely or exclusively on benefits may make a proposed policy appear favourable but cannot meaningfully inform public policy decision-making. Similarly, an analysis that is based on inaccurate or unsupported costs or benefits cannot be used to understand whether a proposed policy is, on net, harmful or beneficial to the economy or society more broadly.

The EC's guidance on conducting impact assessments stresses that in addition to direct effects, potentially important indirect impacts should also be considered. This includes both positive and negative potential impacts.[22]

The Impact Assessment states that increased competition is expected to positively affect productivity growth and real wages,[23] and efficiency gains from the digital single market are described as promoting GDP growth and employment.[24] The Impact Assessment also describes consumers as benefiting from increased diversity and reduced prices resulting from reduced advertising costs for businesses.[25] The presumption that advertising costs will fall is just that – a presumption. Digital advertising costs are largely set by auction, and no reasons are given as to

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[20] Impact Assessment Part 1, ¶ 284.

[21] See "Guidelines on impact assessment," Chapter 3 in Better regulation: guidelines and toolbox, European Commission, § 2.5 (*Question 5*: What are the impacts of the different policy options and who will be affected?), available at https://ec.europa.eu/info/sites/info/files/better-regulation-guidelines-impact-assessment.pdf.

[22] "Guidelines on impact assessment," Chapter 3 in Better regulation: guidelines and toolbox, European Commission, § 2.5.11 (*Question 5*: What are the impacts of the different policy options and who will be affected?), available at https://ec.europa.eu/info/sites/info/files/better-regulation-guidelines-impact-assessment.pdf. ("Potentially important indirect impacts should also be considered, i.e. positive or negative consequences that are incidental to the main purpose of the initiative…").

[23] Impact Assessment Part 1, ¶¶ 292-293.

[24] Impact Assessment Part 1, ¶ 268.

[25] Impact Assessment Part 1, ¶ 321.

why auction prices will be affected. Furthermore, even if prices in specific auctions decline, overall spending on advertising may increase because, by discouraging the use of data, digital advertising may become less effective, leading to increased advertising expenses per acquired customer. This example highlights the importance of analysing the specific policies proposed in the DMA in detail as part of the Impact Assessment, as opposed to assuming beneficial effects.

In the next section, we enumerate and explain in greater detail the benefits considered and purportedly quantified in the Impact Assessment, and the subsequent section looks similarly at costs. By looking at the assessment of benefits and costs, we gain insight into the EC's diagnoses of concerns regarding the digital sector and its reasons for concluding that its proposed prescription will, on net, be beneficial for the European economy. We also address the various costs that the Impact Assessment either ignores or fails to consider and evaluate adequately. These additional costs highlight the reasons why the EC has misdiagnosed the problems it seeks to solve via the DMA and also the risks the DMA poses to the vibrancy of the European economy.

B. The Benefits Considered in the Impact Assessment

(i) GDP Growth

The Impact Assessment purports to estimate the impact of the proposed DMA on economic growth to be EUR 12 billion - EUR 23 billion annually.[26] The reason provided in the Impact Assessment for this is "Higher investment in R&D in the [Information and Communication Technology] ICT sector in EU27 leads to an overall increase in the EU27 income between 0.09% to 0.17% of 2014 EU GDP, this is between EUR 12 billion and EUR 23 billion."[27]

The basis for the estimated increase in GDP growth is an analysis based on an Input-Output model.[28] Input-Output models are based on a simplified understanding of the interconnections between different sectors of the economy. An input-output model is essentially a grid or matrix with different industries represented as both rows and columns. Suppose that the economy is made up of 20 industries, including agriculture, energy, steel, chemicals, automobiles, clothing, transportation, professional services, healthcare, consumer products, computers, mobile telephony, and eight others. An input-output model for this 20-sector economy would be a 20 x 20 matrix describing the inter-relationships among the 20 industries. Each column provides information on the amount of the output of each industry required to produce output in the industry represented by the column. If a column represents consumer products, for example, the data in the column details how much output from other industries (e.g., energy, transportation, and steel) is required to produce output in the consumer products industry. In a similar fashion, the rows indicate the sales or uses of outputs for each industry. The energy row, for example, would describe how much of the output of the energy industry is used in the transportation industry, the steel industry, the chemicals industry, the agricultural industry, etc.

[26] Impact Assessment Part 2, pp. 59 - 60.

[27] Impact Assessment Part 2, p. 59.

[28] The discussion of the Input-Output model starts at Impact Assessment Part 2, p. 67. The Input-Output Model is also addressed in Annex 3 starting at p. 197.

In essence, the input-output table or model is a high-level summary of national production or national income accounting data. It implicitly uses equilibrium analysis, and it ignores innovation. It is deterministic, not stochastic. As such, it is a caricature of the tech sector and its interdependencies.

Input-Output models were the backbone of the Soviet bloc's economic planning until the time of dissolution of the USSR. These models today are sometimes used to estimate effects from certain types of changes to the economy – so called "shocks". For example, if a new hydro dam was to be built or a new mine or factory were to open, the effects of this "shock" (the new dam, the new mine) can be traced through the local economy using an input-output table. Developing the dam/mine is a "shock" to various industries, such as the local construction industry, of a given magnitude. Direct mine construction may cost, for example, EUR 1 million. Using an input-output matrix summarizing information on the local or regional economy, the effects of this shock can be traced through the various industries that make up the economy. An expansion in construction in turn requires inputs from the agriculture sector to feed workers, the energy sector to power construction equipment, and the steel sector to make construction equipment or other parts of the mine, among other inputs into the process of developing the mine. The induced expansion in the energy sector similarly traces through to expansions in other sectors, and so too do the expansions in the agriculture and steel sectors. The first-round shock is the investment in the mine. This investment leads to expansions in other sectors, and these expansions in other sectors themselves lead to further expansions in the sectors related to them, and so on.

The Impact Assessment describes the DMA as promoting increased innovation and reducing business costs. However, the effects of the DMA on GDP growth are not modelled based on an analysis of reduced costs and increased innovation and the effects of such cost reductions and increases in innovation. Rather, to make an input-output model "run", the modeler needs a shock to put through the system. The investment in the mine was the "shock" to the regional economy in our example, and the Impact Assessment similarly needs a "shock" to run through the Input-Output model to estimate the effects of the DMA.

The Impact Assessment describes the "shock" it used to perturbate the model as follows, "[to] incorporate the impact of market contestability and fairer competition in GDP and employment into the I-O model, we needed to assume that such market dynamic would result in higher investment in R&D in the platform economy, impacting in GDP and job creation."[29] This assumed increase in R&D spending is the shock to the model that is then traced through other sectors, such as crop and animal production, mining and quarrying, the manufacture of coke and refined petroleum products, the manufacture of chemicals and chemical products, and other industries.[30]

The Impact Assessment describes how it arrived at the nature and magnitude of the "shock" used in the model. The EC gathered R&D expenditures on information and communication by

[29] Impact Assessment Part 2, p. 69, emphasis added.

[30] See Impact Assessment Annexes, Table 24.

business enterprises in each year from 2015 to 2018. It then took the maximum value of these R&D expenditures as the total value of the shock, which was allocated across three sector subcategories for use in the model. In essence, **the Impact Assessment assumes that, for specific categories of ICT R&D spending, the result of the DMA will be to double R&D spending in each Member State** relative to peak annual ICT R&D spend in that Member State. The peak spending in these categories is the maximum over the years 2015, 2016, 2017, and 2018. For each Member State, the peak spend over the four years from 2015 – 2018 is doubled, and the increase is used as the annual shock for that country. To make this concrete, **Table 1** provides the information used to develop the aggregate ICT R&D spending shock used in the Impact Assessment's analysis for Austria, France, Greece, and Slovenia.

Table 1
Total Annual ICT R&D Spending in Select Countries and the Total ICT "Shock" Used in the Impact Assessment's Input-Output Modelling
(in millions)

Country	2015	2016	2017	2018	Total ICT Shock Value
Austria	€377.939	0	€438.789	0	€438.789
France	0	€3710.013	€4296.257	0	€4296.257
Greece	€54.89	0	€117.540	0	€117.540
Slovenia	0	€31.404	0	0	€31.404

Note: the zero values are reported in the Impact Assessment. The Impact Assessment does not indicate whether there was no spending in these countries during the years for which a zero value is reported or whether there was spending but the EC was unable to collect or estimate the level of that spending.

Source: Impact Assessment Annexes, Table 25.

The total shock in a country's ICT sector was then allocated on a country-by-country basis across the following three subcategories: software publishing (NACE sector J58.2), telecommunications (NACE sector J61), and computer programming, consultancy, data processing, hosting, web portals, and related activities (a combination of NACE sectors J62 and J63.1).

Table 2
ICT R&D Spending Input-Output Modelling Shocks
by Sub-Category for Select Countries
(in millions)

Country	Total ICT Shock	Final J58.2 Shock	Final J61 Shock	Final J62/ J63.1 Shock
Austria	€438.789	€23.496	€64.212	€350.319
France	€4296.257	€1108.143	€463.834	€2516.755
Greece	€117.540	€4.355	€37.481	€75.704
Slovenia	€31.404	€2.767	€3.687	€24.843

Source: Impact Assessment Annexes, Table 25.

In addition to these shocks related to ICT R&D, the Impact Assessment used a similar procedure to develop shocks related to R&D spending for software publishing.[31]

In sum, the Impact Assessment assumes positive spending increases in each Member State in areas such as data processing, web hosting, software publishing, and telecommunications that are, in aggregate value, equal to the maximum ICT R&D spending in that member state over the period 2015 – 2018. **There is no basis for this assumption.**[32] The Input-Output model does not assess the economic impact resulting from changes in innovation or costs that would flow from the proposed DMA directly, and the perturbations used in the Input-Output model are not derived from an analysis of how investment and employment will change due to increased innovation or reduced costs. Indeed, there is no analysis in the Impact Assessment that attempts to estimate how R&D spending, employment, and innovation will change due to the implementation of the proposed DMA. All the empirical estimates of increased production and employment are derived from an artificial, arbitrary, and unsupported assumption as to how spending on data processing, related consultancy, web hosting, and the other factors detailed above will change, and these "shocks" are then traced through the system using an input-output model. Indeed, in our assessment R&D in total is highly likely to go down and not up as a result

[31] Impact Assessment Annexes, p. 203.

[32] The closest the Impact Assessment comes to justifying the assumption that the DMA would increase overall investment is a footnote in Annex 3 referencing the Gutmann and Voigt (2014) paper, which found that the implementation of competition laws increased investment in low-income countries but did not do so in high-income countries. As member states are high-income countries, the cited paper does not support an expectation of increased investment following the implementation of the DMA. See Impact Assessment Part 2, p. 46 fn. 81.

of the DMA.[33] The assumption used is not only unjustified as to amount; it is unjustified as to direction.

It is important to note what an input-output model cannot do. As a model based on historical national income accounting data, the coefficients in the input-output matrix are fixed. They are essentially national accounting statistics. They do not change, for example, because an economic sector becomes more efficient once that sector is digitised, nor can they change to reflect the effects of increased (or decreased) innovation. They are fixed numbers, and an input-output model cannot account for cost reductions, product or service improvements, or the development of new products and services.

An input-output model is an analysis technique applied in situations where the perturbations studied have a factual basis, such as the direct cost to build a factory or expand an airport. The DMA Impact Assessment, however, assumes higher investment in R&D related to the platform economy and has to develop an assumed level of R&D spending growth to make the model work. That assumed growth level may be what the EC intends to be the outcome or hopes will happen, but intentions and hopes – even if good – are not a sound, analytical basis upon which to build an empirical analysis of changes in GDP that has any economic validity or reliability. As noted below where we indicate the negative effects of free riding and diminished systemic innovation, a decline is more likely than an increase. In the Input-Output model used in the Impact Assessment, the assumed increased investment in R&D flows through what are essentially accounting ratios built into the model to estimate the changes in the overall economy. If the starting point has no basis or support, the results of the models based on how these changes flow between the sectors of the economy similarly have no basis or support.

By failing to analyse the effects of the specific policy proposals included in the DMA and instead simply assuming a large increase in R&D spending, the Impact Assessment offers no insight into whether GDP in the EU would expand (or contract) if the DMA were to be adopted. The Input-Output model shock used in the Impact Assessment assumes that R&D spending in the EU would increase in a specific manner across Member States. It deflects attention from that which must be analysed – whether R&D investments will likely increase or decrease, and by how much. Moreover, spending on the development of digital services is part of a global marketplace, with development resources distributed across countries and regions like the United States, Europe, and the Asia Pacific region. Google, for example, is a U.S.-based firm but has a large research lab in Zürich, Switzerland, where it conducts research in the fields of machine intelligence, natural language processing, and machine perception, all of which are

[33] In the EC's analysis of Dow/Dupont, it noted that "appropriability is defined as the ability by an innovator to prevent rivals (including generic suppliers) from imitating successful innovation and/or the ability to monetize inventions through licensing. Because the appropriability channel … positively affects profits when innovation takes place, it tends to favour innovation." Commission Decision of 27.3.2017 declaring a concentration to be compatible with the internal market and the EEA Agreement (Case M.7932 – Dow/DuPont), European Commission, 27 March 2017, Annex 4 ¶ 19, available at https://ec.europa.eu/competition/mergers/cases/decisions/m7932_13668_3.pdf.

branches of the fields of artificial intelligence and machine learning.[34] It also has research facilities in Paris, Amsterdam, Berlin, and Munich.[35] Amazon has development centres in Austria, France, Germany, Ireland, Italy, Luxembourg, The Netherlands, Poland, Romania, and Spain.[36] A scaling back of R&D by U.S. tech companies could be felt in Europe.

In a similar manner, even if spending related to some platforms used by consumers in France or Ireland were to increase, for example, there is no reason to think that the R&D investment supporting these platforms would be completed in these countries or even in the EU. There are several platforms around the world that fall below the DMA thresholds and may be eager to enter a European market free from competition from the designated gatekeepers. The distribution of the increased R&D spending assumed by the EC's analysis is not backed by any empirical economic analysis and ignores the obvious global nature of R&D networks.

In reality, the greatest driver of GDP growth comes from disruptive and systemic innovation – the types of innovation that make digital markets so dynamic. To analyse the effects of the DMA on GDP growth, the Impact Assessment should analyse the impact of individual DMA requirements on both the amount of R&D spending and on the type of R&D spending. The amount of R&D spending may increase or decrease, and if the mix of R&D spending were to shift toward edge innovation, the effect of R&D spending on GDP growth would likely decline. The Impact Assessment should not assume that the DMA's policy proposals will have a beneficial effect on the development of new technologies and GDP growth. Rather, this should be demonstrated. The EC's use of an assumption that R&D spending will increase instead of the presentation of an empirical economic analysis demonstrating likely growth in R&D spending and GDP suggests either that the Commission has prepared no such analysis or that any analyses it prepared suggested at least a significant potential that the DMA would have adverse effects on R&D spending and GDP growth. Neither is a sound basis upon which to develop public policy.

The reality is that there is no reason to think that the DMA's policy proposals will promote or even maintain R&D spending levels, let alone encourage the types of innovation that lead to GDP growth. Instead, the DMA appears to favour add-on investments over systemic innovation. Such a policy is not likely to support GDP growth and could well have just the opposite effect. Policies that promote R&D spending to support or enhance the development of dynamic

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[34] Steven Max Patterson, "Why Google picked its Zurich lab to expand AI and machine learning research", Network World, 17 June 2016, available at https://www.networkworld.com/article/3085427/why-google-picked-its-zurich-lab-to-expand-ai-and-machine-learning-research.html#:~:text=Google%20announced%20yesterday%20that%20it,(AI)%20and%20machine%20learning.

[35] For a description of these locations, see https://research.google/careers/#EMEA.

[36] "Amazon announces it now has over 5,500 tech roles across 25 development centers throughout Europe, with more to come," Amazon Blog, 18 October 2018, available at https://www.aboutamazon.eu/press-release/amazon-announces-over-5500-tech-roles-across-25-development-centers-throughout-europe.

capabilities and to promote dynamic flexibility in the economy are those most likely to promote GDP and per capita income growth.

(ii) Employment

The Impact Assessment's estimated effects on employment are 600,000 jobs preserved (conservative scenario) and between 136,387 and 294,236 new jobs created in more optimistic scenarios. The explanation provided in the Impact Assessment of this is that "[t]he preferred option would either preserve the current level of employment in the sector or lead to its increase thanks to the increase in R&D spending…".[37] This is a highly speculative statement, and implicitly assumes that in the baseline scenario in which the DMA is not implemented, the 600,000 jobs would be lost. This baseline scenario is implausible, as these jobs exist despite the already present diverging rules between member states documented in Annex 5.4 to the Impact Assessment. This existing evidence suggests that further regulatory "fragmentation" would impact employment at the margin rather than causing a paradigm shift whereby those jobs disappear as a category. This is especially relevant since the DMA allows for further fragmentation in competition enforcement, and thus the impact of the DMA on regulatory fragmentation itself is marginal rather than paradigm-shifting.

The Impact Assessment's reported effects of the DMA on EU-wide employment are based on the input-output modelling exercise described in the previous section. Due to the modelling approach taken, and in particular, due to the EC's assumption that the DMA will lead to a doubling of ICT R&D spending, the Impact Assessment's analysis of the effects of the DMA on employment suffer from the same problems as its analysis of the effects on GDP growth. Both sets of estimates are based on an arbitrary assumption regarding the overall effects of the DMA, not on an analysis of the benefits, costs, and effects of the DMA's requirements themselves. Therefore, the Impact Assessment's estimates related to employment lack any basis in empirical economic analysis and instead are derived from the assumption that ICT R&D spending with double relative to peak rates in recent prior years.

Digital commerce and platforms have reduced operating costs for businesses, and they also have made new products and services available to both businesses and consumers. These activities are fundamentally pro-competitive and beneficial to the overall economy, increasing GDP and employment. By failing to analyse the direct effects of the specific policy proposals in the DMA on both the amount and type of R&D spending and the indirect effects, for example, related to innovation spillovers, the Impact Assessment cannot address whether GDP or employment will expand, or even whether the "conservative scenario" of preserving jobs is accurate. If R&D spending were to decline, direct losses in innovation and lost spill-over effects from R&D efforts would lead to declining GDP and employment reductions.

Policies that promote innovation and encourage growing platform ecosystems would be most likely to create employment opportunities and encourage both value creation and per capita income growth. Innovation-based competition to redefine the market not only creates more value, it also requires building dynamic capabilities that contribute more to employment than

[37] Impact Assessment Part 2, p. 60.

would copying or duplicating existing products and services. The DMA appears to disfavour systemic innovation while promoting edge innovation. “Me too” innovation, however, is not the type of innovation that is likely to support growth in employment or increases in real per capita income, let alone to benefit users/consumers.

(iii) Innovation

The Impact Assessment estimates the impact on innovation spending to be between EUR 221 billion and EUR 323 billion over 10 years.[38] The Impact Assessment explains the logic behind this estimate as follows:

> “Financial resources that could be invested in R&D are diverted to mergers and acquisitions (M&A), which results in higher market concentration instead of improvements in the quality and quantity of products and services for consumers. This pattern of innovation dedicated to competing 'for the market' has a detrimental effect on consumer choice and surplus.”[39,40]

The EC’s analysis of this estimate of between EUR 221 billion and EUR 323 billion in increased spending on R&D efforts over 10 years is straight-forward and disturbing in its simplicity. Figure 9 of the Annexes to the Impact Assessment summarises the value of acquisitions completed by the five “big companies behind the largest number of acquisitions” during the period from 2015 to 2019. This Figure is reproduced below:

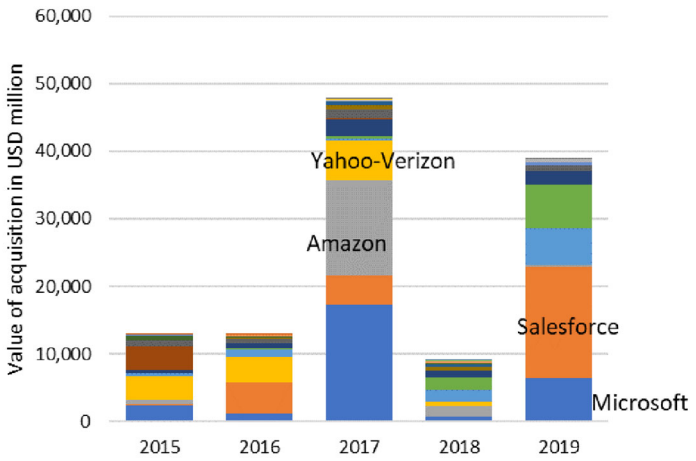
[38] Impact Assessment Part 2, pp. 60 – 61. The Impact Assessment refers to this as simply “innovation”, but the description provided is not of innovation, which is the outcome of R&D spending, but rather of the amount of R&D spending, which is an input into innovative activity.

[39] Impact Assessment Part 2, p. 60. See also Impact Assessment Part 1, ¶ 322 and Impact Assessment Annexes, pp. 76 – 77.

[40] The Impact Assessment notes that “In addition, the positive impact on innovation stemming from higher market contestability is not limited only to diversion of money from M&A to R&D. Other expected indirect effects include an increase in entrepreneurship and creation of new products and solutions meeting consumers' needs rather than focused on exploiting a gatekeeping position. This may have a multiplicative effect increasing the size of the European single market, and hence, GDP and online cross-border trade (see other impacts in this table).” Impact Assessment Part 2, pp. 60 - 61. We note that the analysis on the effect of the proposed DMA on innovation is based on the diversion of money from M&A to R&D and that areas such as GDP growth and cross-border trade are addressed elsewhere. Here, we note only that the Impact Assessment does not attempt to show that the DMA will increase entrepreneurship or result in the creation of new products and solutions that meet consumers' needs. This is another assumption, like growth in R&D spending and enhanced innovation, built into the Impact Assessment, not the conclusions resulting from an economic analysis of the proposed DMA.

Figure 9 from the Annexes to the Impact Assessment

Figure 9. Value of the acquisitions (2015-2019) in USD million



Source: Statista

The Impact Assessment describes what is shown in its Figure 9 as:

> [T]he monetary values of such acquisitions. It appears that in 2015, 2016 and 2018, the total value of acquisitions ranged between USD 9 billion (EUR 7.7 million) and USD 12 billion (EUR 10.2 million), with 2017 and 2019 as atypical years reaching between USD 38 billion (EUR 32.3 million) and USD 47 billion (EUR 39.95).[41]

From this, the Impact Assessment concludes:

> If we assume that 2015, 2016 and 2018 are typical years, the amount above the average could be considered a foregone investment diverted from innovation. This would range between USD 26 billion (EUR 22.1 billion) and USD 38 billion (EUR 32.3 billion) that could have been spent on R&D.
>
> Therefore, the opportunity cost is between USD 260 billion (EUR 221 billion) and USD 380 billion (EUR 323 billion) over 10 years.[42]

The EC's analysis, therefore, assumes that spending on acquisitions over some baseline amount by large tech companies displaces investment in R&D spending (and innovation) on a one-for-one basis. The Impact Assessment therefore treats the largest players in the digital economy as being highly constrained in their ability to finance R&D investments, almost like start-up businesses with only limited access to funding or capital markets. There is no basis

[41] Impact Assessment Annexes, p. 77.

[42] Impact Assessment Annexes, pp. 78 – 79.

for such an assumption, which implicitly assumes multinational capital markets do not function well and also that the largest tech companies exhaust their financial capacity at all times.

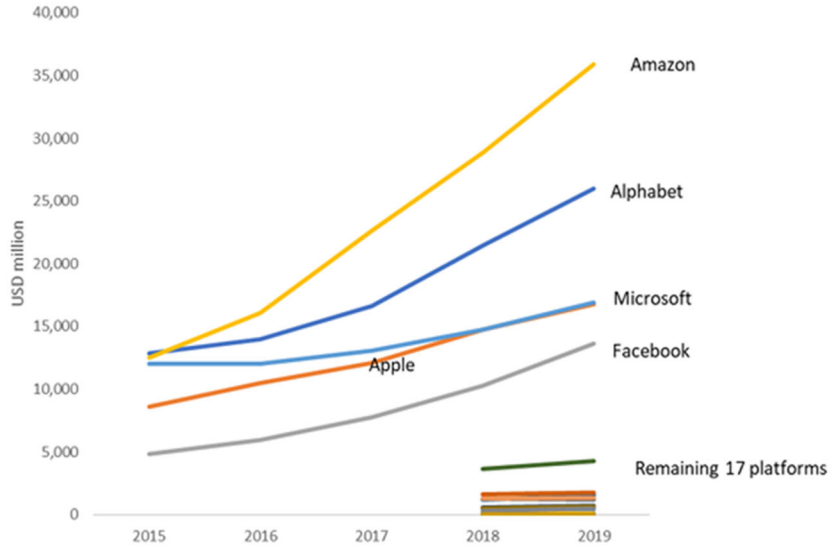
The Impact Assessment further assumes that M&A spending crowds out R&D spending without considering the alternative that M&A activity could actually increase R&D spending. M&A activity may lead to capital inflows for smaller companies with innovative ideas, and therefore M&A activity would promote R&D spending instead of inhibiting it. The need for capital inflows may be the reason why a company is looking to be acquired in the first place. Joining a larger group of companies can provide access to valuable resources, know-how, and infrastructure that can accelerate growth and enable efficient scaling.

We note that the impact of the DMA on merger activity in the digital economy is unclear. The DMA itself does not lower the EU's quantitative merger thresholds, nor does it change the substantive standard used in EU merger review. It is by no means obvious how the Impact Assessment can conclude that all M&A spending over a baseline level would instead be diverted to R&D spending on a one-for-one basis.

Based on the data reported in the Impact Assessment, instead of M&A spending crowding out R&D spending, these two appear to be unrelated. This can be seen from the Impact Assessment itself. The Annexes to the Impact Assessment provide as Figure 7 aggregate spending on R&D by the largest tech companies along with that of smaller platforms. That Figure 7 is reproduced below:

Figure 7 from the Annexes to the Impact Assessment

Figure 7. R&D investment by companies (2015-2019) in USD million



Source: Statista

The Impact Assessment describes 2017 and 2019 as "atypical years" in terms of having very high spending on acquisitions. Even so, aggregate R&D spending and R&D spending by each of the five companies highlighted by the EC were greater in 2019 than in any prior year. Furthermore, spending on M&A activity was highest in 2017, and yet the EC's Figure 7 shows no adverse effects from this M&A spending on R&D spending. Given this, there is no reason whatsoever to assume that spending on acquisitions displaced any investments in innovation, let alone displacing such spending on innovation on a one-for-one basis. This is not surprising given that the companies at issue have large market capitalizations and easy access to credit markets.

There are well established models of corporate R&D spending.[43] Cashflows (from profits) are the biggest driver of R&D spend. There is no basis in economic or financial analysis, therefore, to support the idea in the Impact Assessment that over the next 10 years M&A spending would, in the absence of the proposed DMA, divert between EUR 221 billion and EUR 323 billion from R&D spending. Indeed, we note that even using the Impact Assessment's own purported analysis, there was no diversion between M&A spending and R&D spending in 2015, 2016, or 2018 because these were normal or baseline M&A years. If in three of the last five years there was no diversion from R&D to M&A activity, even though there was M&A activity in these years, arguing that there would be diversion of between EUR 22.1 billion and EUR 32.3 billion every year is not even supported by the evidence cited elsewhere in the Impact Assessment.

[43] See, e.g., Armour, Henry Ogden, and David J. Teece, "Organizational Structure and Economic Performance: A Test of the Multidivisional Hypothesis," *The Bell Journal of Economics,* Vo. 9, No. 1, 1978.

The Impact Assessment does not appear to take into account the economic drivers of R&D spending. It cannot, therefore, make reliable predictions about the DMA's likely impact on R&D spending and innovation.

The Impact Assessment views M&A activity over a baseline level as being detrimental to innovation. If the underlying premise of the Impact Assessment is that the DMA will curb M&A activity in the tech sector, then the Impact Assessment should directly analyse the role M&A activity plays in promoting the overall dynamism of the digital economy, entrepreneurship, and ultimately innovation. Start-ups develop new ideas, and their entrepreneurial activity can be rewarded via sales in the marketplace and the development of businesses that themselves have value. M&A activity therefore rewards and encourages entrepreneurial activity and supports the overall innovation ecosystem. An acquisition may allow a start-up's technology to be distributed and used more widely in the digital sector. M&A activity also may provide funding for smaller entities with more limited or more costly access to credit markets. Basing policy on an assumption that M&A activity in digital markets is harmful is inconsistent with the Commission's competition policy[44] and increases the risks that the interventions prescribed by the DMA will have unintended side-effects.

(iv) Benefits from Investment in R&D

The Impact Assessment estimates the benefits from investment in R&D to be between EUR 12 billion– EUR 23 billion annually. This is described by the Impact Assessment as arising from "[h]igher investment in R&D in the ICT sector in EU27 leads to an overall increase in the EU27 income between 0.09% to 0.17% of 2014 EU GDP, i.e. between EUR 12 billion and EUR 23 billion (input-output modelling)."[45] This is identical to the description provided by the Impact Assessment for its analysis of GDP growth, and the methodology described to estimate benefits from investment in R&D is the same as that used to estimate GDP growth. The Impact Assessment's Benefits from Investments in R&D category, therefore, is the same as its GDP Growth category. As a result, the inclusion of the Benefits from Investment in R&D category in the Impact Assessment amounts to double counting the GDP Growth category. Double counting benefits is not a generally accepted cost/benefits analysis methodology,[46] and therefore we do not further consider the EC's estimates from its Benefits from Investment in R&D category.

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[44] Acquisitions in the digital economy are often vertical or conglomerate, not horizontal. As summarised in the Commission's "Guidelines on the assessment of non-horizontal mergers under the Council Regulation on the control of concentrations between undertakings," Official Journal of the European Union, 18 October 2008, ¶ 11, available at https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52008XC1018(03)&from=EN. ("Non-horizontal mergers are generally less likely to significantly impede effective competition than horizontal mergers."). See also ¶¶ 12 – 13 which address the lack of a direct loss of competition in vertical and conglomerate mergers and the substantial scope for efficiencies arising from such mergers.

[45] Impact Assessment Part 2, p. 61 (footnote omitted).

[46] "Guidelines on impact assessment," Chapter 3 in Better regulation: guidelines and toolbox, European Commission, p. 27, available at https://ec.europa.eu/info/sites/info/files/better-regulation-guidelines-impact-assessment.pdf. ("Whenever impacts are aggregated, you should make sure you avoid any double counting….").

We note that by not actually addressing how investments in R&D will change due to the DMA but rather simply assuming that these investments will double relative to their peak levels on a country-by-country basis over the previous few years (as discussed above), the EC has only assumed its answer. It has not engaged in a rigorous economic analysis of the potential costs and benefits of the policies proposed in the DMA. Given the dynamism of digital markets and commerce, the importance of the digital sector for the broader economy, and the broad and far-reaching changes proposed by the DMA, the Impact Assessment should carefully consider the effects on innovation of the DMA's proposed requirements.[47] It has not done so, but has made fundamental errors of methodology and analysis.

Of course, the real benefit of investing in R&D is not the multiplier from spending but the benefit achieved by innovations that flow from that R&D, which is a different dimension entirely. By focusing on R&D inputs and not outputs, the Impact Assessment fails to address this fundamental implication of the DMA.

(v) Consumer Surplus

The Impact Assessment reports estimated benefits from increased consumer surplus to be EUR 13 billion annually. The Impact Assessment describes these benefits as:

> The higher level of competition may result in lower prices as companies could decrease spending on advertising and lower costs; such savings could be passed onto consumers (especially where (price) competition increases). Consumer surplus of EUR 13 billion is based on the assumption that competitive asymmetry between gatekeepers and alternative platforms would be addressed….[48]

The impression is that the Impact Assessment's modelling includes estimates of both price reductions flowing from reduced advertising and other costs and the pass-on of such cost reductions to consumers. Such an approach would operationalize empirically the description of the source of consumer surplus gains offered by the Impact Assessment. This is not the approach taken by the Impact Assessment, however, even though when quantifying effects, impact assessments are supposed to use the "most appropriate method".[49] The Impact Assessment does not explain why it did not implement a direct estimate of the gains it describes.

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[47] According to EC's Guidelines, impact assessments "should be clear and transparent about any limitations (e.g. data, methodological) and risks of unintended consequences." "Guidelines on impact assessment," Chapter 3 in Better regulation: guidelines and toolbox, European Commission, p. 27, available at https://ec.europa.eu/info/sites/info/files/better-regulation-guidelines-impact-assessment.pdf. Similarly, the EC's Guidelines on impact assessments state that "[p]otentially important indirect impacts should also be considered…."

[48] Impact Assessment Part 2, pp. 61 – 62.

[49] Guidelines on impact assessment," Chapter 3 in Better regulation: guidelines and toolbox, European Commission, p. 26, available at https://ec.europa.eu/info/sites/info/files/better-regulation-guidelines-impact-assessment.pdf.

Instead of developing a direct estimate of cost reductions and estimating the pass-through of these cost reductions to consumers, the Impact Assessment uses a “discrete choice” modelling framework to evaluate demand. The use of such models is common in empirical economic analysis. The Impact Assessment describes the approach taken as:

> This approach uses discrete choice models for the estimation of demand and adds a simulated supply side to compute the industry equilibrium given by the observed data. Adding a simulated supply side to account for firms' strategic behaviour, the observed market equilibrium can be found. Moreover, by changing supply or demand conditions, the framework allows for the design of counterfactuals that simulate policy changes.[50]

The Impact Assessment further describes the analysis as follows:

> We consider the demand for several categories of digital services. Consumers can choose among a large variety of websites that are differentiated in quality. Furthermore, consumers can also decide not to visit a website at all, in which case they can spend their time on other (offline) services goods.[51]

In such a model, the “outside option” is always available to consumers. In the Impact Assessment’s analysis, the outside option is to spend time on offline activities. This sets a minimum value that must be achieved for the individual to find it beneficial to devote time to online activities. If online activities do not provide sufficient value to the end user, they will not spend time online and will instead take advantage of alternative offline activities. As the value of online activities increases, an end user will devote more time to online activities and less to the (offline) outside option.

The model operates to estimate probabilities that consumers take advantage of alternatives (e.g., types of websites). Coupled with this demand model is a model of the supply side of the marketplace. Once the combined supply and demand models are estimated, counterfactual scenarios can be developed.

The modelling described in the Impact Assessment does not attempt to estimate how the DMA will affect innovation or relate any innovation changes to changes in the products or services available to consumers. New and improved products and services generate consumer demand, and the use of these new or improved products and services generates consumer surplus. Increased consumer surplus from new or improved products or services is not part of the Impact Assessment’s analysis, however, nor is the potential for reductions in consumer surplus from reduced innovation. Similarly, the Impact Assessment does not model increases or decreases in consumer surplus caused by changes in the quality or functionality provided by platforms or other websites.

[50] Impact Assessment Part 2, p. 70.

[51] Impact Assessment Part 2, p. 70.

To develop the counterfactual used to evaluate the effects of the DMA, the Impact Assessment assumes that competition will increase. The Impact Assessment does not detail how competition increases or why, but the assumption is flowed through the model to estimate effects. As with the input-output analysis described previously, the estimation assumes the effects of the DMA are beneficial and does not model how or why the provisions of the DMA are expected to have the assumed effects. Unlike the input-output analysis, however, the Impact Assessment does not detail the specific assumption or assumptions made to operationalize the assumed beneficial effects of the DMA. This is the case, even though the Commission's guidance on impact assessments states that "the analytical methods should be clearly justified"[52] and that "[i]n many cases, quantification will rely on a given set of assumptions. These should be clearly presented. Whenever an assumption is particularly important or uncertain, sensitivity analysis should be used to check whether changing it would lead to significantly different results."[53] No sensitivity analysis related to increased competition is provided. Indeed, the analysis upon which the Impact Assessment relies is not even provided.

To estimate the demand-side model, comparisons are made to an alternative market environment, described in the Impact Assessment as "a hypothesised potential market, defined here as representing twice as much as the observed website visits". [54] No economic basis is provided for this assumption of increased consumer website visits.

The Impact Assessment acknowledges that its assumptions are a "limitation" of the methodology, stating "[t]he methodology suffers several limitations. First, the results come from a simulated counterfactual scenario, based on a series of assumptions, which may not necessarily be true."[55] Because the specifics of the assumed counterfactual are not provided, the importance of this limitation cannot be assessed.

The Impact Assessment indicates that its analysis is patterned after two different models, making it even more difficult to determine how the modelling was completed. In Part 2 of the Impact Assessment, the model is described as being related to a 2015 model by Duch-Brown et al that looked at online purchases of household appliances.[56] The Impact Assessment Annexes, however, indicate that the model is related to a 2014 paper by Smaranda Pantea and Bertin

[52] "Guidelines on impact assessment," Chapter 3 in Better regulation: guidelines and toolbox, European Commission, p. 28, available at https://ec.europa.eu/info/sites/info/files/better-regulation-guidelines-impact-assessment.pdf

[53] "Guidelines on impact assessment," Chapter 3 in Better regulation: guidelines and toolbox, European Commission, p. 26, available at https://ec.europa.eu/info/sites/info/files/better-regulation-guidelines-impact-assessment.pdf

[54] Impact Assessment Part 2, p. 71.

[55] Impact Assessment Part 2, p. 72.

[56] Impact Assessment Part 2, p. 70. The reference provided in the Impact Assessment is: Duch-Brown, N., L. Grzybowski and F. Verboven (2015). The Impact of Online Sales on Consumers and Firms: Evidence from Household Appliances. JRC/IPTS Digital Economy Working Paper 2015-15.

Martens related to website usage.[57] The Annexes describe the estimate used by the EC as "these figures [from the 2014 study] were outdated, [and] the authors have updated the estimation for this study giving an impact on consumer surplus for about EUR 13 billion per year."[58]

Finally, we note that the Impact Assessment addresses other information suggesting that there will be consumer surplus gains. For example:

> Quantitative/monetary: Although data to estimate the loss in consumer surplus is limited, there is some illustrative evidence. For example, if Apple's commission fee were halved from 30% to 15%, the average prices of apps in the AppStore could fall, which would increase consumer surplus up to EUR 490 million in the EU per year based on Statista data.[59]

Reduced prices only increase consumer surplus when the characteristics of the product or service purchased are unchanged. It may not be socially beneficial for all prices to be cut in half because there are very likely ramifications from such price changes that need to be assessed as part of the analysis. The Impact Assessment implicitly assumes that markets are static and that the reduced fees would have no other impacts. However, markets are not static, and a 50% reduction in Apple's commissions, for example, would likely lead to other changes – as it would in any other area of commerce. Will such a change in AppStore prices change, for example, how Apple prices its handsets? Will it lead to changes in Apple's investments in its AppStore or application developer tools? How will any changes in its investments affect product quality and the availability of services to business users? How will these changes impact consumers? The EC's commentary on a hypothetical AppStore price reduction shows how static competition assumptions that omit dynamic competition factors are prone to misdiagnosis and increase the risk of unintended side-effects.

Furthermore, the commentary in the Impact Assessment does not acknowledge that with its ecosystem built around its iPhone products, Apple competes with the Android ecosystem. Mandated changes to one part of Apple's ecosystem can impact competition with the Android ecosystem, which may have additional adverse effects on customers. The direct price reduction may be viewed as beneficial to business users, but the indirect effects that flow from the price reduction are unanalysed in the Impact Assessment. An analysis of indirect effects would acknowledge that, with a system, changes in one part of the system can affect other parts as well, and also the feedback effects resulting from any change in Apple/Android ecosystem competition.

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[57] Impact Assessment Annexes, p. 82. The reference provided in the Impact Assessment Annexes is: Pantea, S. and Martens, B., 2014. The value of the internet for consumers. Available at SSRN 2446962. https://ec.europa.eu/jrc/sites/jrcsh/files/ValueOfTheInternetJRC89978.pdf

[58] Impact Assessment Annexes, p. 82.

[59] Impact Assessment Annexes, p. 81.

(vi) Competition

The Impact Assessment suggests that the DMA will change the nature of competition in digital markets in fundamental ways:

> A more competitive market, and a change of patterns of competition from 'for the market' to 'in the market' is expected to contribute heavily towards a virtuous innovation pattern and improve consumer surplus. Consumers would enjoy more and better products/services and lower online harm, considering that online harm and market concentration are positively associated.[60]

Thinking about competition only "in a market" is a quite limited and very static view of markets that does not fit well with the digital economy. New markets are frequently created by the digital sector. Instead of only being "in a market", competition in digital markets often comes not from what are considered to be "horizontal competitors" or direct substitutes in static competition analysis but rather from entry originating from complementors or from participants in adjacent markets or even from areas further removed as businesses utilise their organizational and technological capabilities to move into new lines of commerce.[61] Innovation plays a large role, as firms compete to develop new products or services. In doing so, they often redefine market boundaries and reach unmet consumer demand. Friendster, Myspace, Facebook, Snap, Instagram, and TikTok are not perfect substitutes; each offered its own unique value proposition redefining previous market boundaries and concepts of social media. This kind of competition to redefine the market may make some business models and services obsolete. Such disruptive innovation is strongly pro-competitive and pro-consumer.

Market redefining innovation is sometimes referred to as competition "for the market". Competition "for the market" can be highly beneficial to consumers as companies strive to develop new offerings and get them to market to serve customers quickly. Competition for the market requires innovation and yields manifold benefits to consumers. The EC's expert report on a revised competition policy for the digital era acknowledged this, devoting an entire section "to discuss ways in which competition authorities can protect competition for the market, which…is necessary to provide incentives to supply goods and services at reasonable conditions and to innovate".[62] The Impact Assessment implicitly concedes that the DMA will not aid this process. In fact, the Impact Assessment suggests that "innovation dedicated to competing 'for the market' has a detrimental effect on consumer choice and surplus."[63]

It is well accepted that any attempt to "stamp out" or limit competition "for the market" can be highly damaging to customers and market performance, while disincentivising innovation, to the

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[60] Impact Assessment Annexes, p. 79.

[61] Adner, Ron, and Marvin Lieberman "Disruption Through Complements" *Strategy Sciences*, Vol. 6, No. 1, March 2021, p. 97.

[62] Crémer, Jacques, Yves-Alexandre de Montjoye and Heike Schweitzer, "Competition Policy for the Digital era", European Commission, 2019, p. 55, available at https://ec.europa.eu/competition/publications/reports/kd0419345enn.pdf.

[63] Impact Assessment Part 2, p. 60.

detriment of the overall economy. Market redefining innovation-based dynamic competition is the most powerful tool to promote economic advances, even if there are fewer competitors after the introduction of the innovation. Having multiple competitors using an old technology or business model may lead to more "choice" based on a count of horizontal rivals, but it is choice over old, less efficient, and less desirable technologies, and hence places a drag on economic performance, income growth, and employment.[64] For example, in the European telecommunications sector several studies have shown that whilst access-based competition lowers incumbent market shares and creates more choice for consumers, its outcomes pale in comparison to those of infrastructure-based competition.[65] These studies also showed that European telecoms operators were late to invest in high-speed fibre networks compared to the U.S. and Asia due to regulator mandated access to old copper networks. These findings have contributed towards a policy shift by the European Commission to give access-providers more flexibility in order to encourage infrastructure investment. Whereas the access conditions of telecom regulation were intended to unlock competition and innovation, experience shows that they ossified market structures, reducing the incentives and ability of the regulated company to innovate and invest in the latest technology, whilst also removing the incentives of rivals to do the same. They are a living example of how a focus on static competition can come at the expense of much more valuable and desirable dynamic competition, and in a market far less dynamic and diverse than the core platform services regulated under the DMA.

Another example is Uber. Without Uber, there may be several or even many competing taxi companies in a city, but they compete using older, higher cost technologies and are viewed by many consumers as being less convenient to use than requesting a ride via Uber on an app. Furthermore, competition from Uber, a new entrant using a new business model, has caused many taxi companies around the world to improve their level of service in order to compete. Instead of competition spurring innovation, Uber's entry is an example of innovation spurring competition. In the absence of the dynamic competition brought to the market by Uber, including competition for the market, consumers would be worse off – whether they use Uber or a taxi provider that now offers an improved level of service quality. The potential for both direct and

[64] We note that Margrethe Vestager, Executive Vice President of the European Commission for A Europe Fit for the Digital Age, recently said that "It is important that our ambition is not to copy. It's perfectly fine with one Facebook. I don't think we need a European version of the same. What we need is that in this next amazing chapter of digitalization where public sector services will digitalize, where industry will digitalize, where agriculture will digitalize, that here we also see European businesses scaling up." Hansen, Flemming Emil, "Europe Must Close Huge Tech Gap, Says EU Digital Chief," Forbes, 25 March 2021, available at https://www.forbes.com/sites/zengernews/2021/03/25/exclusive-europe-must-close-huge-tech-gap-says-eu-digital-chief/?sh=5125c07a22bc.

[65] Cave, Martin, Christos Genakos, and Tommaso Valletti, "The European Framework for Regulating Telecommunications: a 25-year Appraisal", *Review of Industrial Organization*, Vol. 55, No. 1, pp. 47 – 62, available at http://eprints.lse.ac.uk/100360/1/Cave2019 ("The general conclusion of the studies that cover copper-based broadband is that full competition between infrastructures is the 'gold standard': It yields better results than access-based competition."); See also Briglauer, Wolfgang, Carlo Cambini, Thomas Fetzer, and Kai Hüschelrath, "The European Electronic Communications Code: A Critical Appraisal with a Focus on Incentivizing Investment in next Generation Broadband Networks", ZEW - Centre for European Economic Research Discussion Paper No. 17-027, June 2017, available at https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3009203.

indirect adverse effects flowing from reduced innovation is not studied in the Impact Assessment as an unintended consequence of the EC's policy goals that underpin the DMA.

Instead of being beneficial, attempting to limit competition or to direct or channel it in a different way is inherently an anti-consumer choice policy strategy. The Impact Assessment should assess the extent of the harm to digital markets and the digital sector more broadly due to an intentional effort to limit specific types of competition, especially innovation-based dynamic competition.

One particularly important type of competition is broad spectrum competition. This is not competition "in a market" but rather involves competition across a plethora of markets using a range of assets and capabilities.[66] Broad spectrum competition provides overarching dynamism as assets and capabilities are continually re-combined in different ways to create new product and service offerings and value for consumers. Broad spectrum competition is common in the digital sector. Regulating methods of competition and hence also innovation and the structure of the industry inherently limits innovation. Broad spectrum competition is not static, is not confined to being "in a market" but rather brings various resources to bear in new and innovative ways to meet customer needs. The Impact Assessment does not address broad spectrum competition but rather is focused on competition "within a market". Indeed, the DMA's ex ante obligations are designed to manage or limit the ability of businesses to compete across different product areas. The DMA's view of effective competition is rooted in the industrial economy and is fundamentally at odds with how dynamic competition in digital markets actually occurs, a topic we return to later.

The failure of the Impact Assessment to address or analyse broad spectrum competition and its negative interpretation of competition for the market in part explains its misdiagnosis of its concerns regarding the digital sector and its failure to adequately address the harmful side-effects that may result from the DMA. The Impact Assessment **provides no empirical economic analysis to explain why any redirection of competition away from existing channels to competition "in a market" would be beneficial to competition overall or why it would enhance the innovative nature of the economy and improve overall economic performance. The Impact Assessment's failure to assess lost disruptive dynamic competition "for the market" and lost broad spectrum competition as costs to be analysed and balanced against the purported benefits to be derived from the DMA means that its evaluation of the net effects of the proposed legislation are incomplete. The Impact Assessment is, therefore, unable to assess whether the proposed legislation is on net beneficial for the EU economy.** Because competition "for" a market encourages significant investments in R&D and product development, limiting this competition would be harmful to the EU economy's output, employment, innovation, and overall economic

[66] See Petit, Nicolas, Big Tech and the Digital Economy: The Moligopoly Scenario, Oxford University Press, 2020.

advancement, and these effects needed to be captured in the Impact Assessment. This is particularly true because the very nature of the digital sector is that it uses new technologies.

Finally, we note that the Impact Assessment includes comments that relate to the HHI, a commonly used index of market concentration. Economists use the HHI to measure market concentration in a well-defined market. This is not what the Impact Assessment does. For example, the Impact Assessment states:

> The HHI index measured on the share of users and revenues should decrease. The magnitude is quite uncertain as the path could follow a non-linear pattern. Considering the HHI on revenue shares increased on average 0.03 points between 2015 and 2019, the HHI could fall from 0.38 in 2019 to 0.32 by 2029 assuming a linear trend. If the competition forces are strong, the market could tend even closer to 0.25 which is the benchmark for a competitive market. Following the same assumptions, the HHI based on user share could fall from 0.65 in 2019 to 0.45 in 2029.[67]

This does not appear to relate to any specific market. Elsewhere, the Impact Assessment refers to HHI measures with regard to the "platform economy"[68] and provides a categorization of market competitiveness based on the HHI (e.g., a market is "moderately competitive" if 1,500 < HHI < 2,500).[69] Unless the platform economy is an antitrust market defined using standard and accepted analytical techniques, these comments in the Impact Assessment have no basis in industrial organisation economics. Furthermore, the predicted changes in the HHI are linear time trends that have no empirical economic basis.

(vii) Internal Market Fragmentation

The Impact Assessment indicates that the DMA will pre-empt the need for individual Member State legislation, and that such legislation would lead to internal market fragmentation. Preventing this fragmentation, the Impact Assessment explains, would expand cross border trade by EUR 92.8 billion annually by 2025.[70] The Impact Assessment explains this as:

> "It is expected that here will be a substantial decrease in internal market fragmentation, as EU Member States will not need to introduce national legislations. The effect of market contestability on the internal single market is proxied by an increase in online cross-border trade and the indirect/spill-over effect in terms of employment, economic growth, innovation and consumer surplus …. If we assume that by preserving the internal market in the platform

[67] Impact Assessment Annexes, p. 93. See also Impact Assessment Part 2 at p. 61 ("It is expected that competition will improve substantially due among other to a substantial decrease in barriers to entry. Conservative estimate is no increase in the HHI Index, while upper bound means a fall in HHI index on for the user shares by 0.25 points and 0.11 for the revenue shares.").

[68] Impact Assessment Annexes, p. 80.

[69] Impact Assessment Annexes, p. 79.

[70] Impact Assessment Part 2, p. 59.

> space cross-border trade projections by 2025 could be maintained, this would lead to EUR 92.8 billion.[71]

Footnote 87 of Part 2 of the Impact Assessment explains the derivation of the EUR 92.8 billion figure. Cross-border e-commerce in Europe was EUR 143 billion in 2019 (excluding travel), with 59% of this generated by online marketplaces. By 2025, this is projected to increase to 65%. The Impact Assessment cites to a press article that cites to a study for these figures. That study, however, relates to 100 electronic marketplaces, nearly all of which are unlikely to be gatekeepers subject to the DMA.[72] The Impact Assessment does not assess the effects the DMA would likely have on the marketplaces under its scope. By attributing the full EUR 92.8 billion figure to the DMA, **the Impact Assessment in essence assumes that all cross-border e-commerce trade generated by on-line marketplaces will cease if Member States introduce individual legislation in the baseline scenario**. Indeed, the Impact Assessment itself describes this as an "extreme scenario."[73] There is no basis for such an assumption, and therefore there is no economic justification for the Impact Assessment's asserted benefits from reduced internal market fragmentation.

There is also no economic justification for the implicit assumption that the DMA itself will not harm cross border e-commerce. If the DMA has an adverse effect on innovation, cross border e-commerce would likely be lower than would otherwise be the case. Furthermore, the DMA explicitly does not harmonize regulation of designated gatekeepers' conduct. Rather, it enables Member State fragmentation done on "competition policy" objectives.[74] However, the Impact Assessment does not attempt to measure or quantify the effect of the regulatory fragmentation permitted by the DMA. Surprisingly, the Impact Assessment cites to fragmentation in national law and regulation relating to the "economic power" of gatekeepers as a justification for the DMA.[75] Given that some of these regulations are done under the rubric of competition laws, or enforced by competition authorities, it is not clear how the regulatory fragmentation cited by the Impact Assessment and permitted by the proposed DMA would not equally result in the

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[71] Impact Assessment Part 2, p. 59.

[72] The Impact Assessment's quantification of costs to gatekeepers is based on there being 7 and 15 gatekeepers under Option 1, between 15 and 20 gatekeepers under Option 2, and 25 gatekeepers under Option 3. Impact Assessment Part 2, p. 64.

[73] Impact Assessment Part 2, p. 118 ("Consequently, in an extreme scenario, where barriers between Member States are established that inhibit all cross-border sales by marketplaces, 59% of total turnover in 2019 would have been lost.").

[74] The DMA explicitly states it is "without prejudice to the application of … national competition rules prohibiting other forms of unilateral conduct insofar as they are applied to undertakings other than gatekeepers or amount to imposing additional obligations on gatekeepers." DMA Proposal, Article 1(6). It nevertheless cites fragmented competition law approaches to clauses found in agreements between platform operators and business users (specifically most-favoured-nation clauses), as evidence of existing fragmentation. DMA Proposal, p. 61. Accordingly, Member States can introduce their own competition law for digital markets, as Germany is currently experiencing with its GWB Digitalization Act which addresses many of the same issues as the DMA.

[75] Impact Assessment Part 2, pp. 109 – 117.

"extreme scenario" relied on by the Impact Assessment to estimate the costs of internal market fragmentation.

(viii) Cross Border Trade

The Impact Assessment estimates the gains from this online cross-border trade to be between EUR 450 billion and EUR 1.76 trillion over 10 years.

> Assuming the internal market fragmentation is fully addressed, the online cross-border trade would increase between EUR 450 billion to EUR 1.76 trillion after 10 years. Although it is hard to forecast with precision the increase in online cross-border trade, the impacts have been proxied by similar trends in offline cross-border trade resulting from market integration. The opportunity costs estimated here are very conservative as the assumed trends were linear and conservative growth rates. The fast change in the platform economy and interlinks with the rest of the economy suggests that online cross-border trade could see an important exponential growth if enhanced by market contestability, fair competition and virtuous patterns of innovation.[76]

The references in this statement to enhanced market contestability, fair competition, and virtuous patterns of innovation create a false impression that the Impact Assessment has modelled online cross-border trade growth caused by or encouraged by the specific policy recommendations in the DMA. This is not, however, what the Impact Assessment has done. The increased cross border trade estimate reported (between EUR 450 billion and EUR 1.76 trillion) is instead derived from the Impact Assessment's analysis of Internal Market Fragmentation.

> The size of online cross-border trade in Europe reached EUR 108.75 billion of turnover in 2019, representing 14.4% annual growth compared to 2018. However, if there is no EU intervention there is a risk of fragmentation in the Digital Single Market, which might reverse the positive trends in cross-border online trade.
>
> Assuming a 10% decrease per year in online cross-border trade, the opportunity cost of the digital market fragmentation would be EUR 1.76 trillion after 10 years.[77]

In short, the EC's estimate of gains from increased cross border trade starts with 2019 cross border trade figures and factors in a 10% decline per year due to fragmentation that would otherwise occur without the DMA. This is not based on an analysis of enhanced market contestability, fair competition, or increased innovation. Indeed, the Impact Assessment does not study competition in digital markets or the potential for increased innovation, and the 10% decline used in the calculations has no evidentiary basis. Instead, the annual 10% decrease is

[76] Impact Assessment Part 2, p. 61.

[77] Impact Assessment Part 2, pp. 118 – 119.

an assumption, and the Impact Assessment traces through the impact of that assumption on total cross-border trade over 10 years and reports the results as a conclusion of the study.[78]

The digitisation of commerce is fundamentally supportive of the growth of cross border trade and market integration across national boundaries. Consumers can search for products and services across a broad set of suppliers, and these suppliers can be located in the consumer's home country or in another country. Digitisation, therefore, facilitates consumer access to services across a broad geography. As such, if the implementation of the DMA were to discourage investment in platforms, reduce their quality or functionality, or lead to service fragmentation as between EU and the rest of the world, the DMA would inherently inhibit cross-border trade, not encourage, expand, or maintain it. In our view, this is a far more likely scenario.

As with other subjects discussed in the Impact Assessment, the analysis of the effects of the DMA on cross-border trade are not based on a study of the specific requirements in the proposed legislation or a model of cross-border trade flows. Rather than diagnose the problem and assess the solution using principles of economic analysis, simple and unsupported assumptions that are favourable to the DMA are made, and the effects of these favourable assumptions are reported as conclusions of the Impact Assessment.

(ix) Fairness

It is difficult to define fairness economically. Nevertheless, we note that changing the rules after investments have been made and applying them to existing platforms may be viewed as being inherently unfair. Nobel laureate economist Oliver Williamson calls this ex-post recontracting. Changing the rules after investments have been made increases risks, alters perceived rewards, and is inherently harmful to the functioning of markets. It also may be unfair to tell companies to compete aggressively under competition law, and then, once they are too successful, tell them that even though they are not natural monopolies they will be subject to pervasive regulation, including opening up their intellectual property to rivals and altering their business models in fundamental ways to facilitate a redistribution of value, and that all of this would be done without going through the legal requirements of competition law that govern the rest of the economy. Finally, it may be viewed as being unfair to assess policy in a cost/benefit framework by assuming the benefits and failing to consider or analyse the costs.

C. The Costs Considered in the Impact Assessment

In addition to the benefits addressed above, the Impact Assessment purports to analyse the costs that the DMA will impose. These costs are broken down into a few categories: the costs to the Commission, the costs to National Authorities, and the costs to the gatekeeper platforms themselves. The Impact Assessment describes the main costs of the DMA for gatekeeper platforms as administrative compliance costs:

[78] "Assuming the internal market fragmentation is fully addressed, the online cross-border trade would increase between EUR 450 billion to EUR 1.76 trillion after 10 years." Impact Assessment Part 2, p. 61. No basis is provided in the Impact Assessment to support the EUR 450 billion figure.

> The main cost relates to compliance costs for gatekeepers as a result of the new rules. Businesses other than gatekeeper platforms may incur certain administrative costs when complying with information requests. These latter costs are, however, unlikely to represent a substantial increase from compliance costs businesses would otherwise incur due to information requests in EU competition law cases or under different specific national rules.[79]

The Impact Assessment does note that there may be other costs to platform businesses, but does not attempt to quantify them, nor does it address the effects of these other costs on business users of platforms or consumer end users of platform services.[80]

We first address the costs actually considered by the Impact Assessment and subsequently address the costs ignored by the Impact Assessment. These include costs to business users of platforms, consumer end users of platforms, and the platforms themselves. A cost/benefit analysis that largely ignores costs cannot meaningfully inform public policy decision-making.

(i) Costs to the Commission

The costs for the European Commission are estimated in the Impact Assessment as being between €6.4 million and €18.2 million, reflecting between 30 and 90 FTE employees depending on the specific DMA option selected.[81] The Impact Assessment notes that most of these would be transfers of existing Commission staff currently used elsewhere. Given the far-reaching obligations imposed and the need for continued monitoring, these estimates likely understate the true costs.

(ii) Costs to National Authorities

The costs to National Authorities are described as relating to tasks like responding to consultations held by the EU regulator in order to enable the regulator to integrate national expertise before taking decisions on guidelines, non-compliance, and fines and to study draft EC decisions. These costs amount to between €4.3 million and €6.0 million for between 2.5 FTE and 3.5 FTE for each Member State.[82] As with the costs to the Commission, these costs are also likely underestimated.

(iii) Costs to Platforms

The Impact Assessment acknowledges that the proposed DMA will adversely affect the compliance costs of platform businesses but indicates that these costs are relatively small. It states, for example:

> Compliance costs … would largely substitute for the already high costs large platforms incur for complying with divergent regulatory measures gradually put in

[79] DMA, Explanatory Memorandum, p. 10.

[80] Impact Assessment Part 1, ¶ 302.

[81] Impact Assessment Part 2, pp. 62 – 63.

[82] Impact Assessment Part 2, pp. 63 – 64.

> place in different Member States. Such costs would imply some additional legal compliance officers to check company policies against the new rules; some employees to interface with the regulator and respond to requests for information. These would be higher the longer the list of obligations and the broader the digital services in scope.[83]

The Impact Assessment estimates these costs to be between €9.87 million and €35.25 million annually depending on the number of gatekeepers that come under the DMA's scope, with 20 FTEs per gatekeeper.[84] These costs are for preparing for compliance with rules, adding compliance officers to staff, and responding to requests for information.[85]

Even though the proposed DMA's obligations include significant changes to how gatekeepers operate (e.g., requiring third party access to systems using APIs that do not yet exist), the Impact Assessment's review of costs is limited to administrative costs. The Impact Assessment does not consider any costs that platforms would need to bear to design, develop, and implement the engineering changes to comply with the DMA's requirements, nor does it assess costs arising from the need to use an alternative business model or to position their products or services differently in the marketplace.[86]

The engineering costs necessary to bring platforms into compliance are likely to be very large. The platforms have not been designed to provide real-time access to third parties as would be required, for example, by many parts of the DMA, including:

- Article 6(f): Business users and providers of ancillary services be provided with access to and have the ability to interoperate with the operating system, hardware, and software features available to or used in the provision by the gatekeeper of any ancillary services;
- Article 6(h): Business users and end users be provided with effective portability of data generated through the activity of the business or end user, including the provision of tools to facilitate the exercise of data portability;
- Article 6(i): Business users be provided free of charge with effective, high-quality, continuous, and real-time access and use of aggregated or non-aggregated data; and
- Article 6(j): Third party online search engines be provided upon with access on fair, reasonable and non-discriminatory terms to ranking, query, click, and view data in relation to both free and paid search.

Re-engineering large and complex pre-existing systems, for example, by developing API-based interfaces where no such interfaces now exist, is likely to be a difficult and time-consuming

[83] Impact Assessment Part 1, ¶ 300.

[84] Impact Assessment Part 2, p. 64.

[85] Impact Assessment Part 2, pp. 64 – 65.

[86] We do not comment on the merits of any of the specific policy proposals included in the DMA.

undertaking.[87] For example, Article 6(f) requiring gatekeepers to allow providers of ancillary services access to and interoperability with the same operating system, hardware, and software features available to or used by the gatekeeper in providing ancillary services may require the gatekeeper to complete a substantial re-architecture of its underlying services. Such a re-engineering may also impair efficient operations thereafter. In the ancillary service example, in addition to cost, operational impairment may have both performance and security aspects (both on the device and in the cloud). As another example, the Article 6(j) requirements for a gatekeeper search engine to provide to other online search engine providers upon request with ranking, query, click, and view data may require the re-architecture of its system to allow data access to its rivals in a manner that has sufficiently low latency for the data to be actionable. It will also require the development of a dynamic, search-term based FRAND pricing mechanism.

Other parts of the DMA would necessitate large changes in the operations and business models of gatekeeper platforms. For example, the DMA requires:

- Article 5(c): Business users be allowed 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
- Article 6(c): Entities be allow to install and use third party software applications or software application stores using, or interoperating with, operating systems of that gatekeeper.

Changing business models can be very costly for businesses because they need to redesign their operations around alternative value propositions.

Operational costs are also likely to be very large. For example, the Article 5(c) requirement allowing offers to be promoted and contracts to be concluded off-platform may lead the platform to develop a subscription-based service model. This would require a re-engineering of its business and re-vamping of its marketing. It may also lead to reduced platform use due to subscription charges for end users, meaning less transaction potential for business users.

(iv) Costs to Ecosystem Users and the Broader Economy

The Impact Assessment ignores the adverse effects of reduced innovation that may result from the DMA's restrictions, or any changes in product or service quality as a result of the changes in business models that may be required by the DMA. As such, the Impact Assessment substantially underestimates direct costs to the platforms that come under the scope of the DMA's requirements and the adverse impacts on other ecosystem participants, including end users. Reduced innovation harms all ecosystem participants directly and via lost innovation spillovers, both of which lead to the provision of products and services that are lower quality than they would otherwise be. The EC's expert report on competition policy in the digital era recognised this, noting that:

[87] Managing consent and anonymization of personal data add additional complexity.

> [F]ull protocol interoperability can come at a high price: the need for strong standardisation across several competing platforms could significantly dampen their ability to innovate and to differentiate the type(s) of service(s) they provide. One of the most important grounds for continuing competition between platforms, and possibly for competition for the market, could therefore be weakened or even eliminated.[88]

These adverse impacts are almost certain to occur using any model of economic decision making. The Impact Assessment's failure to consider such costs is an egregious omission.

The assumption made in the Impact Assessment is that platforms will continue with business as usual and that there will be no or only very limited implications of the DMA for the products or services provided, or the business models used. The Impact Assessment states:

> It can therefore be expected that an increased contestability of the markets would, even with some changes to their business model due to the regulatory intervention, continue to incentivise gatekeeper platforms to bring innovative products to the market and compete for consumers and business users.[89]

Also:

> It should be stressed that the foreseen interventions will neither ban specific monetisation models (such as ad-based models) nor prevent the uptake of new services by gatekeepers - they prevent them from acting unfairly in their operations and reduce competition in the markets where they are present. Even in those cases where, due to the multi-sidedness of the market, there is a cross-subsidisation between the different sides and consumers already benefit from zero prices, more contestability and competition would not change the business model. On the contrary, more contestability and competition would increase the diversity of offers available to consumers and would reduce the prices to advertisers which would then indirectly reflect in lower prices charged by those advertisers when selling their products and services to consumers.[90]

There is no basis for this conclusion that the DMA will not result in changes in the products and services available in the economy or the business models used by participants active in the digital sector. Given the extent of the changes required (e.g., a search engine's business model would be altered to provide ranking, query, click, and view data – the core of its product – to direct horizontal rivals), the idea that there would be no changes in the products or services offered or the business models pursued is an extreme assumption lacking any foundation in

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[88] Crémer, Jacques, Yves-Alexandre de Montjoye and Heike Schweitzer, "Competition Policy for the Digital Era", European Commission, 2019, p. 59, available at https://ec.europa.eu/competition/publications/reports/kd0419345enn.pdf.

[89] Impact Assessment Part 2, pp. 46-47. Similar language is included in Impact Assessment Part 1, ¶ 303.

[90] Impact Assessment Part 2, p. 48 (emphasis added).

business reality. It also contradicts the advice of the EC's expert report, which stated that "competition law must take the incentive effects into account before imposing a duty to deal, or more specifically a duty to grant access to data. At the same time – in particular if the dominant data holder is a platform – the interest balancing needs to figure in the importance of protecting competition for the market".[91]

Platforms involve the use of two- or multi-sided business models. Google search provides natural search results to users free of charge while earning revenues from its advertising business; Facebook provides end users access to social media free of charge while similarly earning revenues from advertising; booking sites allow end users free access while earning commissions on sales made to end users. Other systems are more complex. Apple, for example, earns revenues from the sales of devices along with fees from app stores and subscription services. As systems, there is no reason to think that a change in one part of a firm's business will not lead to changes elsewhere. If a booking site, for example, cannot earn commissions from sales, it will necessarily need to reconsider its business model. It could, for example, charge users an annual fee to run a certain number or perhaps an unlimited number of queries for rooms, airline tickets, concert tickets, or whatever else it sells. Music and movies are sold now via streaming services, and such a business model may not be an unreasonable alternative for the booking site to consider. Would restrictions on an AppStore lead to changes in handset or tablet pricing? The Impact Assessment does not reflect systems thinking but rather treats individual parts of a business model as being independent. In reality, platforms are interconnected systems.

Changes in platform business models should be considered in an impact assessment.[92] There are potentially large and significant implications of changes in business models. Consumer use of platform services would necessarily decline if access fees were charged because some will decide not to subscribe. There is a reason why many platforms charge a zero monetary price to end users, and the implications of changes in the business models used by these platforms need to be carefully considered. It is especially costly and sometimes fatal to adjust a business model, both with regard to direct operating costs and the costs resulting from going to market in a less effective or efficient manner.

Charging consumers access fees will necessarily result in reduced network effects for platforms, lessening the value they create for society. We note that this concern was also raised by the EC Regulatory Scrutiny Board opinion on the Impact Assessment, stating that the report "should

[91] Crémer, Jacques, Yves-Alexandre de Montjoye and Heike Schweitzer, "Competition Policy for the Digital Era", European Commission, 2019, p. 105, available at https://ec.europa.eu/competition/publications/reports/kd0419345enn.pdf.

[92] Guidelines on impact assessment," Chapter 3 in Better regulation: guidelines and toolbox, European Commission, p. 23, available at https://ec.europa.eu/info/sites/info/files/better-regulation-guidelines-impact-assessment.pdf. ("For all retained options, the impact assessment should specify how they would tackle the identified problems and meet the policy objectives. To do this, there is a need first to identify the changes that a proposal would imply for those affected…").

consider the negative consequences of curtailing the size advantages following from network economies and economies of scale for consumers."[93]

Issues related to potential changes in business models are exacerbated by Article 11(3) of the DMA. Article 11(3) is an equal treatment requirement.[94] It means that a platform cannot charge different prices, for example, based on whether a user takes advantage of rights or choices made available by Articles 5 and 6 of the DMA (e.g., free access to end users searching for a booking if a business user agrees not to contract with end users off-platform but end user access limited to subscription customers only if the business user wants the right to contract off-platform). Article 11(3) places further restrictions on platform business models, making it more likely that any distortions induced by the DMA will have broad consequences for ecosystem participants.

We note that while the Impact Assessment includes no direct or indirect costs for ecosystem users or the broader EU economy in its enumeration of costs and benefits, it does mention that some such costs may exist. It indicates, however, that such costs are difficult to quantify. The Impact Assessment describes these costs as follows:

> Indirect (other than compliance) costs may be higher, as proposed measures are expected to have impact on gatekeepers' business models and potentially reduce their supra-normal profits. The impact of such changes is difficult to quantify. While some loss of revenue for gatekeeper is expected, there are no indications that this would result in significantly higher fees and/or reduced quality for businesses and consumers. Consumers are at the core of platforms' business strategy and, due to the relevance of indirect network effects and economies of scale, gatekeepers need to attract an important number of consumers in order to be able to (i) attract businesses (and vice versa) thus allowing online matching of offer and demand, and (ii) benefit from the virtual growth cycle characterising the platform economy.[95]

[93] "Regulatory Scrutiny Board Opinion", Proposal for a Regulation of the European Parliament and of the Council on contestable and fair markets in the digital sector (Digital Markets Act), European Commission, p. 1, available at https://digital-strategy.ec.europa.eu/en/library/impact-assessment-digital-markets-act.

[94] Article 11(3) states: "A gatekeeper shall not degrade the conditions or quality of any of the core platform services provided to business users or end users who avail themselves of the rights or choices laid down in Articles 5 and 6, or make the exercise of those rights or choices unduly difficult."

[95] Impact Assessment Part 1, ¶ 302. Along these lines, the Impact Assessment Annexes also state: "It is also possible that ex ante regulation of gatekeeper platforms could also fail to increase (or even reduce) investment in R&D and improve service quality, if the benefits of integration and conglomeration and concentration of cashflows and R&D by a limited group of companies, outweigh the benefits that can be achieved through innovation from a more diverse group of companies." Impact Assessment Annexes, p. 70.

Independent of whether they are difficult to quantify, such costs can be very large and dwarf compliance costs.[96] They need, therefore, to be carefully considered and evaluated. The EC's guidance on impact assessments stresses this, stating:

> It is often difficult, therefore, to provide accurate estimates, at the Commission proposal stage, even of direct impacts such as compliance or implementation costs. Nevertheless, "known unknowns" should not be cast aside in the analysis. On the contrary, they should be readily acknowledged. In case of lack of data or uncertainties, the qualitative assessment needs to be strengthened (e.g. based on theoretical approaches), while being transparent about the impact that such uncertainties may have on the comparison of options.[97]

Instead of readily acknowledging direct and indirect costs for ecosystem participants and the broader EU economy, including platform implementation and operational costs), the Impact Assessment does not consider any details relating to these costs and suggests that these costs are relatively small by referring to the DMA's provisions as being "targeted". It states:

> [A]ll options are designed in a targeted way, taking into account the currently available experience and evidence about the impact of specific unfair practices by gatekeepers on their business users and customers as well as on the contestability of digital markets.
>
> Given that the rules only aim to prevent unfair and harmful conduct, they should not hamper market entry (even) by gatekeepers if the latter is based on fair

[96] Indirect costs from lost innovation can be large because the social returns to investment in R&D exceed the private returns. There is extensive literature showing that social returns to investment in R&D exceed private returns because spill-over effects are uncompensated, and therefore society underinvests in R&D and innovation. See Griliches, Zvi "The Search for R&D Spillovers," Chapter 11 in R&D and Productivity: The Econometric Evidence, Griliches, Zvi (ed.), University of Chicago Press, 1998, p. 251; Hall, Bronwyn H., Jacques Mairesse, and Pierre Mohnen, "Measuring the Returns to R&D," Chapter 24 in Handbook of the Economics of Innovation, Hall, Bronwyn H. and Nathan Rosenberg (eds.), Vol. 2, 2010, pp. 1033-1071; Mansfield, Edwin et al., "Social and Private Returns from Industrial Innovation," *The Quarterly Journal of Economics,* Vol. 91, No. 2, May 1997, pp. 221-234; Tewksbury, J. G., M.S. Crandall, and W.E. Crane, "Measuring the Societal Benefits of Innovation," *Science,* Vol. 209, 1980, pp. 658-659, Table 1; Bloom, Nicholas, Mark Schankerman, and John Van Reenen, "Identifying Technology Spillovers and Product Market Rivalry," *Econometrica.* Vol. 81, No. 4, 2013, pp. 1347-1384; and Jones, Benjamin F. and Lawrence H. Summers, "A Calculation of the Social Returns to Innovation", National Bureau of Economic Research Working paper 27863, September 2020, available at https://www.nber.org/papers/w27863. There are also studies related to specific technologies. For example, Trajtenberg, Manuel, "The Welfare Analysis of Product Innovations, with an Application to Computed Tomography Scanners," *Journal of Political Economy*, Vol. 97, 1989, pp. 444-472; Teece, David J., Peter C. Grindley, and Edward F. Sherry, "The Glass Industry and the Pilkington Float Process," Appendix B in Managing Intellectual Capital: Organizational, Strategic, and Policy Dimensions, Teece, David J. (ed.), Oxford University Press, 2002, p. 225.

[97] Guidelines on impact assessment," Chapter 3 in Better regulation: guidelines and toolbox, European Commission, p. 27, available at https://ec.europa.eu/info/sites/info/files/better-regulation-guidelines-impact-assessment.pdf

> means of competition. As far as they do not use their market position in an abusive way their 'first mover advantage' could be preserved.[98]

As detailed in this quote, the Impact Assessment claims that the DMA's requirements are targeted, but claiming this and demonstrating it are two different things. The EC's Regulatory Scrutiny Board itself identified the lack of flexibility and tailoring of remedies as a concern, stating that a DMA with more flexible remedies "seems to score best in minimising false negatives/positives and future proofing".[99] Having targeted requirements is important because the policy recommendations are supposed to be proportionate to the problems identified. The Impact Assessment states repeatedly that the DMA's requirements are targeted,[100] but this is not shown. Nor can it be shown without a complete assessment of costs. As explained by the EC's guidance on the preparation of impact assessments:

> After a first assessment of impacts, it may be necessary to go back to the drawing board and experiment with modifications to the original alternatives to improve them further. This will typically be the case when options fail to meet the objectives in a satisfactory way or when they are likely to lead to disproportionate negative effects (of any type, for instance, on fundamental rights, SMEs, competitiveness and innovation, trade partners, regions, developing countries, etc.). An option should not be judged inferior before having reviewed possible improvements and/or mitigating measures to reduce its negative impacts.[101]

The Impact Assessment does not consider the adverse implications for investment in existing or new platforms of the requirement that business users be allowed to free ride on the matching services provided by a platform by allowing end user customers and businesses to contract outside of the platform if desired. (See, for example, DMA Article 5(c) allowing business users to conclude contracts outside of the platform.) Uncontroversial microeconomic analysis indicates that free riding discourages investment. It is undisputed that such DMA provisions will dis-incentivise spending on R&D by incumbent platforms. This would limit innovation relative to the

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[98] Impact Assessment Part 1, ¶¶ 304 – 305.

[99] "Regulatory Scrutiny Board Opinion", Proposal for a Regulation of the European Parliament and of the Council on contestable and fair markets in the digital sector (Digital Markets Act), European Commission, p. 2, available at https://digital-strategy.ec.europa.eu/en/library/impact-assessment-digital-markets-act.

[100] For example, Part 1 of the Impact Assessment states that the DMA's requirements are targeted in ¶ 186 ("Option 1 would provide for a new targeted ex ante regulatory framework, which would apply to identified 'core platform services' (see Section 5.2.1) provided by designated gatekeepers."), ¶ 201 (Option 2), ¶ 225 (Option 3), ¶ 298 ("Third, the targeted scope of options imposing rules only on the largest platforms, or on undertakings contributing to a market failure, strongly contributes to the proportionality of any potentially resulting compliance costs."), ¶ 304, ¶ 364, and ¶ 366. Similarly, the Annexes state that the DMA's requirements are targeted at p. 72 ("The preferred option is option 2a (semi-dynamic regulation), because it strikes an appropriate balance between legal certainty and flexibility, which should result in the most targeted and effective interventions, while limiting the degree of costs incurred for both the regulatory authority and stakeholders.").

[101] Guidelines on impact assessment," Chapter 3 in Better regulation: guidelines and toolbox, European Commission, p. 23, available at https://ec.europa.eu/info/sites/info/files/better-regulation-guidelines-impact-assessment.pdf (emphasis added).

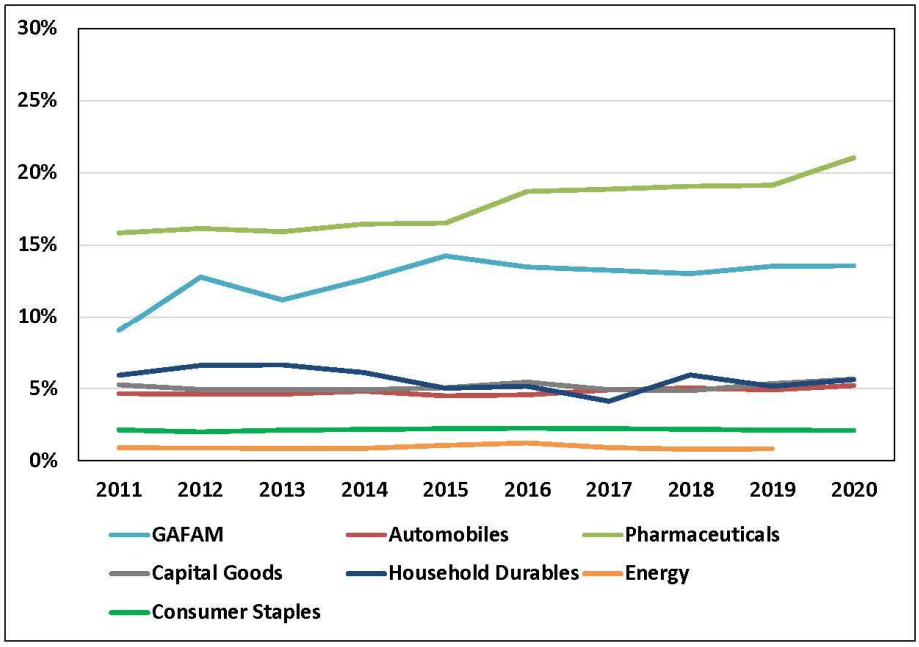
world that would otherwise exist absent the requirements of the proposed DMA. Even if priced at FRAND terms, providing proprietary information developed in the course of operating a business to rivals, such as a search engine's search term, click, and view data, discourages the collection of such data in the first place. Again, this is a point recognised by the EC's expert report on competition policy in the digital era,[102] but ignored in the Impact Assessment.

In short, the specific policy proposals in the DMA provide incentives for most incumbents to reduce investments. Such a reduction in innovation would impose costs on ecosystem participants. Given the potential magnitude of these costs, failing to estimate the value changes (reductions) they may bring about is an obvious error as the potential direct and indirect effects of these and other provisions in the proposed DMA on platforms, their business customers, or their end use consumers is a critical component of a meaningful assessment of the impact of the proposed DMA. As with free riding, regulation which requires providing access to a business's intellectual property to rivals can only chill innovation at the core platform level.

The potential adverse effects on R&D spending and associated innovation arising from disincentives due to the DMA may be very large. Spending on R&D for several of the largest entities active in the digital economy is summarised in Figure 7 of the Impact Assessment's Annexes, which we provided and discussed in Section III.B(iii) above. Furthermore, the R&D intensity of these largest firms is very high, as shown in the Figure below that provides the average R&D intensity for Google, Apple, Facebook, Amazon, and Microsoft. R&D intensity is measured by R&D spending as a percentage of total revenues. Globally, these firms altogether spent over $125 billion on R&D in 2020, yielding an R&D intensity of about 14 percent. Given total R&D spending for these firms and their high average R&D intensity, reduced incentives to invest may lead to large, negative changes in overall R&D spending. Such an outcome would result in large adverse effects over time for business users, consumers, and the economy overall.

[102] Crémer, Jacques, Yves-Alexandre de Montjoye and Heike Schweitzer, "Competition Policy for the Digital Era", European Commission, 2019, p. 106, available at https://ec.europa.eu/competition/publications/reports/kd0419345enn.pdf ("The situation is different when it comes to requests for access to usage or behavioural data that a dominant platform has observed and collected, in particular where the essential business model of the platform is premised on acquiring a large user base, and hence a large amount of data. In such cases, data collection cannot be considered a mere by-product of another activity. Rather, the incentives to invest in new products and acquire consumers is intrinsically linked to data acquisition.").

Average Yearly R&D Intensity as Measured by R&D Spending as a Percent of Total Revenue for Google, Apple, Facebook, Amazon, and Microsoft Compared to Top R&D Spenders in Other Industries 2011-2020



Source: Capital IQ; Global Innovation 1000 Study, PwC, available at https://www.strategyand.pwc.com/gx/en/insights/innovation1000.html.

Notes:

(1) The top 5 firms by overall R&D spend from 2011-2020, in each industry grouping, are used to compare to GAFAM. The companies represented in each industry are as follows:

Automobiles: Volkswagen Aktiengesellschaft, Toyota Motor Corporation, Ford Motor Company, General Motors Company, and Daimler AG

Pharmaceuticals: Roche Holding AG, Johnson & Johnson, Merck & Co., Inc., Novartis AG, and Pfizer Inc.

Capital Goods: General Electric Company, Siemens Aktiengesellschaft, Airbus SE, The Boeing Company, and Toshiba Corporation

Household Durables: Sony Corporation, Panasonic Corporation, LG Electronics Inc., Sharp Corporation, and Nikon Corporation

Energy: PetroChina Company Limited, Exxon Mobil Corporation, Royal Dutch Shell plc, TOTAL SE, and Schlumberger Limited

Consumer Staples: The Procter & Gamble Company, Nestlé S.A., Unilever PLC, L'Oréal S.A., PepsiCo, Inc.

(2) This chart is based on each company's respective fiscal year. Fiscal year end dates vary by company.

(3) All currency conversions were completed by Capital IQ

(4) Industry groupings relied upon are from PwC.

(5) 2020 average is not shown for Energy, as not all companies have reported.

A good portion of this R&D spend takes place in Europe. Wherever in the world the work is conducted, however, investments in R&D and innovation more generally are especially precious because of positive spillovers, something that the Input-Output model used in the Impact Assessment is unable to measure. In that model, an R&D investment is looked at like any other

investment, when in fact investment in R&D yields a social rate of return many times the private return. A very recent study put the ratio of the social returns to the private returns from R&D at about 4 to 1.[103] While all net social return estimates are based on imperfect data, the general pattern is consistent across industries, years, and geographies. The table below summarises studies conducted over the past 40 years. An innovator will receive only a small fraction of the social returns from innovation, and the gap is likely to be greater the more widely applicable the innovation. For instance, in the case of the float glass process, Teece et al. estimated that Pilkington (the innovator and owner of the pioneering patents and trade secrets) received only 4.2% of the benefits measured in terms of consumer surplus.[104]

[103] Lucking, Brian, Nicholas Bloom, and John Van Reenen "Have R&D Spillovers Declined in the 21st Century?" *Fiscal Studies*, Vol 40., No 4, 2019, pp. 563 – 564.

[104] Teece, David J., Peter C. Grindley, and Edward F. Sherry, "The Glass Industry and the Pilkington Float Process," Appendix B in Managing Intellectual Capital: Organizational, Strategic, and Policy Dimensions, Teece, David J. (ed.), Oxford University Press, 2002, pp. 242 – 243.

Selected Industry-Level Estimates of Private and Social Rates of Return to Investment in R&D[105]

Study	Sample (Location, Size, Time period)	Within-Industry Return	Return in Other Industries
Griliches and Lichtenberg (1984)[106]	United States 193 industries 1959–78	11% to 31%	50% to 90%
Goto and Suzuki (1989)[107]	Japan 50 industries 1978–83	26%	80%
Bernstein and Nadiri (1989)[108]	United States 4 industries 1965–78	7%	9% to 13%
Bernstein (1998)[109]	Canada 11 industries 1962–89	12.8%	19% to 145%
Bernstein (1998)[110]	United States 11 industries 1962–89	16.4%	28% to 167%
Griffith, Redding, and Van Reenen (2004)[111]	12 OECD countries 12 industries 1974–90	47% to 67%	57% to 105%

[105] With the exception of the last row (Lucking, Bloom, and Van Reenen), this table was previously published in Teece, David J., "The 'Tragedy of the Anticommons' Fallacy: A Law and Economics Analysis of Patent Thickets and FRAND Licensing," *Berkeley Technology Law Journal*, Vol. 32, 2017, p. 1519, available at https://doi.org/10.15779/Z38RR1PM7N.

[106] Griliches, Zvi, and Frank Lichtenberg, "Interindustry Technology Flows and Productivity Growth: A Reexamination," *The Review of Economics and Statistics,* Vol. 66, No. 2, May 1984, pp. 324 – 329.

[107] Goto, Akira, and Kazuyuki Suzuki, "R&D Capital, Rate of Return on R&D Investment and Spillover of R&D in Japanese Manufacturing Industries," *The Review of Economics and Statistics*, Vol. 71, No. 4, November 1989, pp. 555-564.

[108] Bernstein, Jeffrey I., and M. Ishaq Nadiri, "Research and Development and Intra-Industry Spillovers: An Empirical Application of Dynamic Duality," *Review of Economic Studies,* Vol. 56, No. 2, 1989, pp. 249 – 269.

[109] Bernstein, Jeffrey I., "Factor Intensities, Rates of Return, and International Spillovers: The Case of Canadian and U.S. Industries," *Annales d'Économie et de Statistique*, No. 49/50, 1998, pp. 541 – 564.

[110] Bernstein, Jeffrey I., "Factor Intensities, Rates of Return, and International Spillovers: The Case of Canadian and U.S. Industries," *Annales d'Économie et de Statistique*, No. 49/50, 1998, pp. 541 – 564.

[111] Griffith, Rachel, Stephen Redding, and John Van Reenen, "Mapping the Two Faces of R&D: Productivity Growth in a Panel of OECD Manufacturing Industries," *The Review of Economics and Statistics*, Vol. 86, No. 4, November 2004, pp. 883 – 895.

Lucking, Bloom, and Van Reenen (2019)[112]	United States 1985–2015	14%	58%

The well–documented presence of social returns greater than private returns—whatever the actual gap may be in a particular case—leads to the conclusion that private firms, absent other incentives, will make insufficient investment in innovation when considered from the perspective of society as a whole. Hence, it is critical to protect the returns from R&D so that firms keep investing. The DMA very much puts that at risk for the incumbent and every successful new entrant alike.

Policymakers cannot judge whether the DMA's requirements are disproportionate without studying the potential direct and indirect adverse effects of the DMA on innovation. Spillovers need to be a part of the risk analysis, but they are ignored in the DMA. **The Impact Assessment has not analysed any of these important potential direct and indirect effects.**

Overall, the Impact Assessment's view of platform business models is static, not dynamic, which can only exacerbate the Commission's misdiagnosis of any concerns in the digital sector. Furthermore, by understating (or ignoring) costs, the Impact Assessment is fundamentally unable to assess whether the DMA is, on net, favourable for the overall EU economy. Costs and benefits cannot be balanced, compared, or weighed if the costs and benefits considered are incomplete. **The costs assessed by the Impact Assessment are highly incomplete.** The appropriateness of the EC's prescribed remedies cannot be assessed without an assessment of the costs the DMA would likely impose on the economy.

(v) Technology Transfer

The EU benefits from the transfer of technology developed by large technology firms outside of the EU. Such technology gets built into new product and service offerings. The DMA does not mention how these flows might be impacted. If innovations are released elsewhere but their transfer to the EU is held back, slowed, or arrested, for example, due to concerns regarding free riding, the implications for the EU economy could be serious, relegating it to a digital backwater. This is not a minor omission. Rather, it is a major flaw. The Impact Assessment ignores the global nature of the R&D system and as noted it ignores the spillovers from innovation. The interconnected global science and technology system has been operating this way for at least 30 years, and one should be very cautious about interfering with it in the absence of a good accounting of how the system actually works.[113] It is neither mentioned nor discussed, let alone analysed, in the Impact Assessment.

[112] Lucking, Brian, Nicholas Bloom, and John Van Reenen "Have R&D Spillovers Declined in the 21st Century?" *Fiscal Studies*, Vol. 40, No. 4, 2019, pp. 563 – 564.

[113] Wagner, Caroline, Kenneth B. Poland, and Xiaoran Yan, "Flows and Networks in Global Innovation Systems Among Top R&D Nations," Working Paper, 8 March 2021, available at https://static1.squarespace.com/static/5d5f0079ed0caf00014c2fe2/t/6053ea8c4b8a9f361b34110b/1616112271849/Flows-and-Networks-in-Global-Innovation-Systems_2021-03-08.pdf.

(vi) Impacts on SMEs

The Impact Assessment does not foresee adverse effects on SMEs. SMEs would not be targeted by the DMA's list of obligations because SMEs are very unlikely to qualify as gatekeepers.[114] Rather, the Impact Assessment states that SMEs should gain via enhanced access to the internal market.[115] Indeed, the Impact Assessment states that SMEs would gain from the DMA because a more "innovative and competitive business environment" will enable their opportunities to grow.[116] The Impact Assessment also states:

> We conclude that the benefits to SMEs, start-ups and consumers from measures which are particularly effective in achieving the aims of increasing contestability, boosting innovation and addressing barriers to the single market are likely to substantially exceed the costs of the measure.[117]

These statements can be seen as no more than conjectures by the EC, conjectures not supported by academic research or empirical analysis, and in fact inconsistent with many tenets of the literature on the management of innovation.

The conclusion that the DMA would lead to net gains for SMEs, with benefits that substantially exceed the costs of the measure, cannot be reached without an understanding of both the costs and benefits of the DMA. Because the Impact Assessment fails to consider the potential for the DMA to impose direct and indirect costs on the digital sector and the economy more broadly via increased costs, reduced innovation and related spillovers, and adverse changes in platform business models, it cannot determine that, on net, the DMA will promote the interests of SMEs. For example, if platforms are forced to alter their business models by providing services in exchange for subscription fees instead of providing free services to end users, the exposure of an SME to its potential customer base would be lessened.

Even if an SME gains in the short run by being able to contract off-platform with existing customers, it may be harmed over a longer time horizon from reduced exposure to potential customers.

IV. Concluding Comments

The Impact Assessment asserts that it underestimates the benefits of the DMA:

> Both impacts on growth and employment (below) are very conservative estimates because they result exclusively from an increase in R&D investment. However, market contestability and more fair competition are expected to

[114] Impact Assessment Part 1, ¶ 306 ("SMEs would not be targeted by the list of obligations as they are very unlikely to qualify as gatekeepers.")

[115] Impact Assessment Part 1, ¶ 306.

[116] Impact Assessment Part 1, ¶ 307.

[117] Impact Assessment Annexes, pp. 70 – 71 (footnotes omitted).

> produce important spillover effects that result in higher innovation, increase in market size, increase of entrepreneurship within and beyond the platform economy and growth in other traditional sectors. Online cross-border trade is expected to be highly impacted by this virtuous dynamic. Therefore, this estimation is not taking into account further rounds of direct and indirect effects with positive loops in the long-term.[118]

Instead of assuming its answer, the Impact Assessment should utilise broader economic and strategic frameworks to consider the likely effects of the DMA. Dynamic models of competition and innovation are ignored in the Impact Assessment in favour of highly rigid and structured economic models originally built to analyse quite different types of questions. We have never before seen an effort to use an input-output model to calibrate the impact of a legislative initiative to regulate/restructure a large industry or sector of the economy undergoing rapid technological and business model change. Given the dynamic nature of the digital sector, using a static model that by construction makes no allowance for the creation of new products, services, or business models cannot form an adequate basis to assess the overall impact of significant changes in an industry built not on physical assets but rather on investment in R&D, the collection and analysis of data, the development of software, and the creation of innovative business models.

The various types of competition the digital sector has seen have resulted in the vibrant and innovative digital services and marketplaces we see today. The Impact Assessment, however, indicates that the EC would like to channel competition in the digital sector to being competition "in a market". This is unlikely to improve industry performance and instead may limit the industry's vibrancy. Policymakers should consider how competition actually occurs in the digital sector, and the Impact Assessment should reflect these competitive dynamics. At the very least, the DMA should allow even designated gatekeepers to engage in consumer welfare generating dynamic innovation-based competition. A small addition to Article 9(2) could achieve this effect.[119]

Unfortunately, dynamic competition still does not get the attention that it deserves, and nowhere is this more apparent than the DMA Impact Assessment. Its shortcomings are inviting Europe to sleepwalk into a future it doesn't really want. Jean-Jacques Servan-Schreiber observed 54 years ago that what Europe really needs is "the ability to transform an idea into reality through... the talent for coordinating skills and making rigid organizations flexible."[120] This is a plea for policies that promote the development of dynamic capabilities in businesses across the European economy. Though such policies would be beneficial in many sectors, they are particularly important in the digital sector. What was true 54 years ago is relevant today. The EC

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[118] Impact Assessment Part 2, pp. 59 – 60 (emphasis added). See also Impact Assessment Annexes, pp. 75 – 76.

[119] Article 9 of the proposed DMA currently allows for exemptions "for overriding reasons of public interest". It is hard to see how the public interest could be better served than by preserving innovation-based dynamic competition for the market.

[120] Servan-Schreiber, Jean-Jacques, Le Défi Américain 1967, p. 65.

should promote policies that encourage innovation in the knowledge-based economy.[121] The DMA, and the future of competition policy in the digital era, are an opportunity to get the diagnosis right and make up for the shortcomings caused by years of prioritising static competition over dynamic competition. A DMA that fails to do so could be a prescription that causes more harm than good, with adverse side-effects not only on digitally-enabled commerce in Europe, but on the wider European economy, its innovative and dynamic capabilities, and its future prosperity.

[121] Petit, Nicholas, Big Tech and the Digital Economy: The Moligopoly Scenario, Oxford University Press 2020.