

**Old Tools for the New Economy?
Counterfactual Causation in Foreclosure Assessment and Choice of Remedies on Data-driven
Markets ***

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Under the recently proposed EU Digital Markets Act (DMA), ‘gatekeeper’ digital platforms have to comply with a number of ex-ante obligations, including narrow ex-ante data-sharing mandates that have been proposed as a viable solution to the phenomenon of data-driven market tipping. Digital platforms will also be subject to ex-post competition interventions, some of which are already ongoing. Given that both ex-ante regulatory and ex-post competition enforcement can address the issue of data-driven market tipping, there is a significant chance that thought from one policy domain will influence the other. This can be readily seen in the DMA, which heavily borrows from competition doctrine.

Such intellectual cross-fertilization needs to be approached with care, however. For one, the objectives and reasons of existence of the two domains are different. Second, data-driven markets are dynamic and always evolving, which means that rigorous ex-post effects analysis that does not simply fall back on ideas and practices from ex-ante regulation is of pivotal importance for i) correctly assessing anti-competitive behavior and ii) devising an appropriate ex-post remedy. This latter point can be seen with regard to data-sharing mandates, which will continue being important as possible ex-post competition remedies even after the adoption of the DMA with its ex-ante solution in that regard. However, a fine-grained, effects-driven assessment of the need for data sharing obligations in an ex-post enforcement setting will be vital, given new political and business-led data-sharing initiatives, novel techniques for generating synthetic data, and companies’ increasing skill at drawing powerful conclusions from small data sets.

In sum, authorities need to proceed carefully with regard to ex-post interventions in dynamic data-driven markets already governed by ex-ante obligations, in particular in two respects: i) establishing that abuse of dominance has taken place (especially given that ex-ante obligations will soon be in place) and ii) choosing the right remedies if such abuse is found. With regard to the former, we propose a ‘multiple counterfactual causation test’ for establishing anticompetitive foreclosure. With regard to the latter, we maintain that ex-post data-sharing mandates should only be imposed after careful proportionality analysis vis-à-vis the counterfactually identified abusive behavior; otherwise, they are unlikely to be effective remedies and other remedial actions need to be considered.

I. Introduction

In the countdown to the adoption of regulation for digital giants ('gatekeepers') in the EU, this paper emphasizes the importance of *enforcement coordination* between the newly proposed Digital Markets Act (hereinafter DMA),¹ an ex-ante sanctioning tool, and ex-post competition policy, specifically regarding the phenomenon of data-driven market tipping and its remedies (data-sharing mandates). The paper further proposes a tentative strategy for such *coordination* – namely, employing a rigorous counterfactual causation assessment under an ex-post, dominance-based (Article 102 TFEU) effects analysis of data-driven market tipping (Section III.1).² Counterfactual thinking can also be employed at the ex post³ remedial stage – a method that has both its proponents⁴ and detractors.⁵ In Section III.3 on remedies, we take an alternative, 'shortcut' approach. Namely, we base ourselves on the view of Lianos⁶ that remedies should be derived from anticompetitive effects analysis through a proportionality test. Hence, there is no need for a separate counterfactual assessment of remedies if counterfactual analysis at the level of effects assessment is already performed and then tied to a suitable remedy through a proportionality requirement.⁷ This method, in our view, offers the highest enforcement flexibility – a feature ex-post competition enforcement needs to maintain in order to interoperate with impending ex-ante regulation of digital markets without dissonance.

This paper's focus stems from the recognition that the chances of dissonance between ex-ante regulatory and ex-post competition enforcement are high for two reasons – one substantive and one pertaining to institutional design. Dissonance is hereby understood as inefficient and ineffective enforcement interventions under either or both policy domains.

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¹ Proposal for a Regulation of The European Parliament and of The Council on Contestable and Fair Markets in the Digital Sector (Digital Markets Act) COM(2020) 842 final. The legislative proposal for ex-ante regulation under the Digital Markets Act (hereinafter DMA) and the accompanying Digital Services Act (hereinafter DSA) were released by the Commission to the public on 15 December 2020. More information on both instruments can be found on the Commission's website: <<https://ec.europa.eu/digital-single-market/en/digital-services-act-package>>.

² The reason why we only focus on Article 102 TFEU is that 'gatekeepers' in the sense of the DMA are likely to only be companies that are dominant in the sense of Article 102 TFEU. This fact makes the latter provision the most logical enforcement choice for ex-post competition cases.

³ Reversible ex-ante data sharing mandates *applicable to all gatekeepers* will be sealed in legislation under the DMA, which means *individual* mandates can only still be accorded to companies in an ex-post competition framework. Hence, while ex-ante obligations will be a given across the board (for all gatekeepers), it is important for individual ex-post competition remedies to take them into consideration and adapt to them.

⁴ C Ritter, 'How Far Can the Commission Go When Imposing Remedies for Antitrust Infringements' (2016) 7 (9) Journal of European Competition Law and Practice; P Hellström et al, 'Remedies in European Antitrust Law' (2009) 76(1) Antitrust Law Journal.

⁵ V Kathuria and J Globocnik, 'Exclusionary Conduct in Data-driven Markets: Limitations of Data-sharing Remedy' (2020) Journal of Antitrust Enforcement.

⁶ I Lianos, 'Competition Law Remedies in Europe' in I Lianos and D Geradin (ed), *Handbook on European Competition Law: Enforcement and Procedure* (Cheltenham: Edward Elgar 2013).

⁷ As Hellström aptly puts it '[...] the Commission is entitled, within the limits set by the proportionality principle, to require the undertakings concerned to undo the distorting effect their anticompetitive behavior has had on the market.' P Hellström et al (n 4).

With regard to institutional design, unlike the US, the EU accepts the dual application of both ex-ante and ex-post obligations on undertakings.⁸ This means that a digital giant already subject to ex-ante regulation can additionally be subjected to an ex-post antitrust investigation should it also run afoul of an antitrust prohibition. Most likely, the relevant antitrust prohibition would be Article 102 TFEU, as designated ‘gatekeepers’ under the DMA are also likely to be dominant companies in the sense of Article 102 TFEU.

Substantively, both domains are capable of addressing the issue of data-driven market tipping – a central concern by design for the DMA and a subject of increased recent scrutiny under competition policy.⁹ The currently vague regulatory objectives of the DMA,¹⁰ however, create the potential for substantive dissonance between the two fields. In other words, although the DMA (heavily competition-policy inspired)¹¹ mentions that it will apply *without prejudice* to the existing competition rules and cases,¹² it is possible that insights or assumptions from one regime start feeding into the other due to conceptual proximity and unclear delineation of objectives. That the danger of substantive dissonance is real can be seen in competition policy’s neighbor domain of telecommunications.¹³ There, as illustrated by the recently decided *Slovak Telekom*¹⁴ case, interaction with ex-ante regulation led to an ‘abridged’ test for abuse of dominance under Article 102 TFEU and ultimately to a less rigorous ex-post assessment. Such cross-fertilization should be avoided for two reasons.

First, the logic inherent in ex-ante regulation and ex-post competition is different; the former *automatically outlaws* practices on specifically designated markets where competition is structurally weak (markets prone to failure), while the latter only condemns practices *after assessment of their*

⁸ This is a consequence of the different rules created by the respective case law of the EU (Judgment of 14 October 2010, *Deutsche Telekom AG v European Commission*, C-280/08 P, ECLI:EU:C:2010:603), on the one hand, and the US (*Verizon v. Trinko*, 540 U.S. 398 (2004)), on the other. For a detailed account, see P Larouche, ‘Contrasting Legal Solutions and the Comparability of EU and US Experiences’ in F Lévêque and H Shelanski (ed), *Antitrust and Regulation in the EU and US* (Edward Elgar 2009).

⁹ See, for instance, the most recent investigations opened against Amazon and its usage of data of third-party sellers to benefit itself: <https://ec.europa.eu/commission/presscorner/detail/en/ip_20_2077>.

¹⁰ Z Georgieva, ‘The Digital Markets Act Proposal of the European Commission: Ex-ante Regulation, Infused with Competition Principles’ (2021) 6 (1) *Quaderni Europei*.

¹¹ The cases from which the DMA borrows much of its envisioned remedies are currently pending before the CJEU. See, among others, Case T-612/17 *Google and Alphabet v Commission* (action brought on 11 September 2017, pending), Case T-604/18 *Google and Alphabet/Commission* (action brought on 9 October 2018, pending) and Case T-334/19 *Google and Alphabet v Commission* (action brought on 04 June 2019, pending), respectively.

¹² See DMA (n 1), recital, point 9.

¹³ Both De Streel and Colomo have proposed to regulate big tech under a regime similar to the EU Telecommunications framework. For the proposals of the former author, see P Alexiadis and A de Streel, ‘Designing an EU Intervention Standard for Digital Platforms’ 14 EUI Working Paper RCAS 1028 For the latter author’s latest views, consult P Colomo, ‘On Case C-165/19 P, *Slovak Telekom*: an Upcoming Development under the Radar’ (*Chilling Competition Blog*, 24 July 2020) <<https://chillingcompetition.com/?s=telecomm>> accessed 06 May 2021.

¹⁴ Judgment of 25 February 2021, *Slovak Telekom*, C-857/19, EU:C:2021:139.

actual effects (on markets capable of self-correction).¹⁵ In this sense, abridging effects analysis under ex-post competition enforcement as happened in the *Slovak Telekom* case is highly undesirable¹⁶ as it might stifle dynamic digital markets in numerous ways, the most important being legal uncertainty for businesses as to the applicable rules.¹⁷ This possibility is rather palpable, as will be illustrated not only by the *Slovak Telekom* case but also by the older *Deutsche Telekom*¹⁸ ruling discussed in Section III below. Second, and relatedly, data-driven markets are subject to dynamic changes and thus require rigorous ex-post, effects-informed competition analysis should an antitrust case be opened against a firm already subject to ex-ante regulatory obligations (specifically, narrow data-sharing mandates under the DMA). Such rigorous antitrust analysis could be achieved through studying the effects of impugned data-driven harm (theory of harm) and the concomitant remedies (i.e. ex-post data-sharing mandates) through the tool of counterfactual causation as expressed in the Commission's Guidance Paper on Article 102 TFEU.

In light of the above research agenda, the paper is developed in the following sequence: in Section II, building on a body of inter-disciplinary scholarly works, we chart out the theoretical debate on the extent of anticompetitive harm caused by data-driven market tipping; we then critically examine the most commonly suggested remedy for this phenomenon – mandated data-sharing obligations. Section II.3 then proceeds to discuss and critically examine the legal framework within which the latter obligations will be adopted – the proposal for the DMA. Finally, in recognition of the fact that the DMA will soon become a reality,¹⁹ this paper prescribes a counterfactual causation-based approach to ex-post competition enforcement on data-driven markets at the levels of i) foreclosure assessment and ii) remedies.

II. Data-driven market tipping: a case for ex-ante mandated data sharing?

¹⁵ This is also why the DMA is touted as an instrument that fits in the European ordoliberal tradition (concerned with market structure), while competition rules are governed by the Chicago effects-based paradigm. See A de Streel et al, 'The European Proposal for a Digital Markets Act: A First Assessment' CERRE Report <<https://cerre.eu/publications/the-european-proposal-for-a-digital-markets-act-a-first-assessment/>> accessed 06 May 2021.

¹⁶ For a note on the case, see D Geradin and R O'Donoghue, 'Papering Over the Cracks: the GCEU Judgment in Case T-851/14 Slovak Telekom v Commission' SSRN Working Paper <<https://ssrn.com/abstract=3328476>> accessed 06 May 2021.

¹⁷ Specifically for dynamically changing digital markets, legal certainty is of the essence. This also seems to be acknowledged by the CJEU in para. 56 of its *Slovak Telekom* judgment. See *Slovak Telekom* (n 14). There, the court mentions in passing that an indispensability test under Art.102 TFEU has to be performed even in the face of prior regulation when there has been change in the market conditions of the regulated markets.

¹⁸ Judgment of 25 February 2011, *Slovak Telekom*, C-857/19, EU:C:2021:139 and Judgment of 14 October 2010, *Deutsche Telekom AG v European Commission*, C-280/08 P, ECLI:EU:C:2010:603. For a critical appraisal of the *Deutsche Telekom* case, see N Dunne, 'Margin Squeeze: from Broken Regulation to Legal Uncertainty' (2011) 70 (1) Cambridge Law Journal 34.

¹⁹ The DMA is to be sealed into law in 2023 the earliest. See M Wiggers and R Struijlaart, 'Commission Aims to Introduce 'Traffic Lights' for the Digital Sector – Detailed Regulation for the Digital Sector Instead of Genuine Ex-ante Enforcement' (*Kluwer Competition Law Blog* 17 December 2020) <<http://competitionlawblog.kluwercompetitionlaw.com/2020/12/17/commission-aims-to-introduce-traffic-lights-for-the-digital-sector-detailed-regulation-for-the-digital-sector-instead-of-genuine-ex-ante-enforcement>> accessed 06 May 2020.

II.1. Data-driven market tipping: the theory

The advent of digital markets and in particular the faster pace at which market power manifests and entrenches itself on them has put to the fore the pertinent question of how this phenomenon can be addressed through policy. In this context, some suggest enhanced competition/antitrust²⁰ scrutiny, while others go further and propose introduction of ex-ante economic regulation (regulating big tech as public utilities).²¹

The motivation of some of the latter proposals lies in the now established workings of data-driven indirect network effects for big data companies (providers).²² These effects are a relatively recent phenomenon related to the advent of big data, whereby a ‘user’s utility is not directly affected by other users but the amount of other users increases the provider’s stock of user information, which in turn decreases the cost of innovation for the provider.’²³ Data-driven indirect network effects are a source of invariable market skewing towards monopoly (i.e. tipping) that, according to economic thought,²⁴ is very difficult to reverse and should therefore be prevented through ex-ante intervention. Market tipping is a particularly ‘sticky’ phenomenon, as it decreases the incentive to innovate ‘sharply for all market players’.²⁵ In other words, because incentives to innovate on tipped data-driven markets are low, it is difficult – though not impossible²⁶ – for them to ‘untip’.

Hence, one can see market power and consequent tipping on data-driven markets as close to, but just short of, a permanent market failure. This in-between position warrants debates as to how one should approach data-driven markets from a policy perspective. Traditionally, as Vickers and Kay point out, when a market is characterized by a failure other than market power – for example, information asymmetry – ex-ante regulation can be seen ‘as a prerequisite for there to be effective competition’.²⁷

²⁰ J Cremer et al, ‘Competition Policy for the Digital Era’ Publications Office of the European Union See also I Graef, ‘Rethinking the Essential Facilities Doctrine for the EU Digital Economy’ (2019) 53 (1) *Revue juridique Thémis de l’Université de Montréal* 33 Please also note that in the present paper, the terms ‘antitrust/competition’ are used interchangeably.

²¹ L Khan, ‘Sources of Tech Platform Power’ (2018) 2 *Georgetown Law Technology Review* J Prüfer and I Graef, ‘Mandated Data Sharing is a Necessity in Specific Sectors’ (2018) 103 *Economisch Statistische Berichten* 298.

²² See C Argenton and J Prüfer, ‘Search Engine Competition with Network Externalities’ (2012) 8 (1) *Journal of Competition Law and Economics* 73 See also N von Ingersleben-Seip, ‘What are Data Network Effects and What is Their Impact on Market Competition?’ (*Medium*, 29 February 2020) <https://medium.com/@n_vingers/data-network-effects-and-their-impact-on-market-competition-be31323c1bbf#_ftn3> accessed 06 May 2021.

²³ J Prüfer, ‘Competition Policy and Data Sharing on Data-driven Markets: Steps Towards Legal Implementation’ Project Commissioned by the Friedrich Ebert Stiftung .

²⁴ *Ibid* 9.

²⁵ *Ibid* 6.

²⁶ See Prüfer and Graef, (n 21). Specifically, the authors claim the following: ‘after market tipping not only competition in the market but also competition for the market *is heavily reduced*.’ However, this does not remove the option for ‘untipping’, which is recognized in literature on digital markets more generally. For instance, in the context of multi-homing, Haucap writes: ‘Since incentives to foreclose platform markets by impeding multi-homing are strong and competition more difficult to *reinstall* once a market has tipped, preserving multi-homing options should be a key concern of competition authorities.’ See J Haucap, ‘Competition and Competition Policy in a Data-driven Economy’ (2019) 54 (4) *Intereconomics* 206.

²⁷ J Vickers and J Kay, ‘Regulatory Reform: an Appraisal’ in G Majone (ed), *Deregulation or Regulation* (Francis Printer 1990).

However, when the issue is market power (a type of non-permanent market failure), the base slogan is ‘competition where possible, regulation where necessary.’²⁸ Hence, one-off ex-post competition interventions are the preferred default, with ex-ante regulation applied only exceptionally. Given this model, data-driven market tipping – being close to permanent market failure and yet based in market power (itself a non-permanent market failure)²⁹ – should cause vigorous debate as to the appropriate regulatory tactic to address it.³⁰

This is indeed so: while many voices, including the European Commission itself,³¹ speak for an invariable ex-ante solution that prevents tipping through employment of data-sharing mandates, management and business strategy literature remains more skeptical. In these policy and scholarly circles, fewer voices speak out for intervention³² and many call for moderation in regulation or even no meddling with digital markets at all.³³ According to Evans, several peculiar features of digital markets make them work competitively, amongst which are low costs of entry, low costs associated with adding/changing program features through code, enhanced user experiences due to direct and indirect network effects, possibility of users to switch between different providers or multi-home.³⁴

While the latter contribution is older and thus superseded by more recent accounts that demonstrate the specific potential of data-driven indirect network effects to tip markets,³⁵ a very recent account by the legal scholar Nicolas Petit has put forward a theory of ‘mologopolistic’ competition³⁶ that also

²⁸ Ibid.

²⁹ That it is not certain whether digital markets suffer from permanent market failures is also a point made by Petit and Gal. See N Petit and M Gal, ‘Radical Restorative Remedies for Digital Markets’ (2021) 37 (1) *Berkeley Technology Law Journal* For the same point, see D Melamed, ‘Digital Antitrust Reforms In The EU and The US: What Role for the Courts’ (*Concurrences* 9 March 2021) <<https://events.concurrences.com/fr/digital-competition-2021?lang=fr>> See also J Furman et al, ‘Unlocking Digital Competition: Report of the Digital Competition Expert Panel’ UK Government .

³⁰ A similar point (although reasoned on the basis of DMA’s enforcement objectives and not on market failures) is made by Monti. He observes that in the DMA the Commission seems to be doing two separate things ‘[...] the legislator appears to suggest that some gatekeepers can be – gradually – supplanted while others are akin to utilities and must be regulated as such.’ See G Monti, ‘The Digital Markets Act – Institutional Design and Suggestions for Improvement’ TILEC Discussion Paper 2021-004 <<https://ssrn.com/abstract=3797730>> accessed 6 May 2021.

³¹ Many of the special reports on the workings of digital markets propose an ex-ante regulatory approach. See Furman et al (n 29), Cremer et al (n 21). For scholarly accounts, see J Prüfer and I Graef (n 21) and P Alexiadis and A de Streel (n 13).

³² JC Tirole and J Rochet, ‘Platform Competition in Two-Sided Markets’ (2003) 1 *Journal of the European Economic Association* 990. See also B Thompson, ‘A Framework for Regulating Competition on the Internet’ (*Stratechery*, 09 December 2019) <<https://stratechery.com/2019/a-framework-for-regulating-competition-on-the-internet>> accessed 06 May 2021.

³³ B Evans, ‘How to Lose a Monopoly’ (*Benedict Evans*, 01 January 2020) <<https://www.ben-evans.com/benedict-evans/2020/01/01/microsoft-monopoly-and-dominance>> accessed 06 May 2021 See also DS Evans, ‘Multisided Platforms, Dynamic Competition, and the Assessment of Market Power for Internet-Based Firms’ Coase-Sandor Institute for Law and Economics, Working paper no 753 <https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2746095> accessed 06 May 2021 DS Evans and R Schmalensee, ‘The Industrial Organization of Markets with Two-Sided Platforms’ NBER Working Paper Series no 11603 <<https://www.nber.org/papers/w11603>> accessed 06 May 2021 GJ Sidak and DJ Teece, ‘Dynamic Competition in Antitrust Law’ (2009) 5 *Journal of Competition Law and Economics* 581.

³⁴ D S Evans (n 33).

³⁵ J Prüfer and C Schottmüller, ‘Competing with Big Data’ TILEC Discussion Paper No 2017-006 and CentER Discussion Paper No 2017-007 <https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2918726> accessed 06 May 2021.

³⁶ N Petit, *Big Tech and the Digital Economy: the Mologopoly Scenario* (OUP 2020).

discovers competition dynamics in these contexts. As Petit points out,³⁷ one should not look for competition on the *narrower, tipped* markets where digital giants hold their respective monopolies; rather, enforcers should look at the big picture and examine whether there might well be competition in the *broader context* of digital ecosystems. Hence, data-driven indirect network effects operating in a core market could be superseded as competition begins to emerge in adjacent markets. According to Petit, such competition is currently happening in the markets for payments, messaging, video streaming, productivity applications, hardware, cloud computing, mobile phones, wearables, virtual reality, and driverless cars, among others.³⁸ This creates conditions for oligopolistic competition in these broader markets and, if not competitive markets, at least contestable markets.³⁹ The oligopolistic competition in broader markets, in turn, keeps (near-) monopolists on their toes in the narrower markets which they dominate, as they are concerned that users might simply move on to the next ‘hot’ technology or app, abandoning the monopolists’ dominant technologies. Hence, the threat of the emergence of superior, differentiated substitutes is the engine behind the above-described ‘moligopolistic’ competitive dynamics. For example, Facebook was clearly worried that users would desert its social network for messaging app Snapchat, prompting Facebook’s management to introduce new features that mimicked those of Snapchat. About 15 years prior, Google’s new Android mobile operating system (OS) represented such a serious competitive threat to Microsoft’s Windows desktop OS in the context of increased mobile phone usage that Microsoft started investing large sums into developing its own mobile OS.

The upshot for regulation of moligopolistic structures is not to intervene ex-ante on the basis of economic thinking focused on market failures (those can be addressed through ex-post competition interventions), but to rather use tools such as consumer and data protection law that can better address the non-economic harms that moligopolists often bring with them.⁴⁰ Under this view, there would be no reason to intervene prospectively (ex-ante) to address cases of data-driven market tipping; such a line of argumentation would also make ex-ante data-sharing mandates obsolete.

³⁷ N Petit, ‘Technology Giants, the ‘Moligopoly’ Hypothesis and Holistic Competition: a Primer’ SSRN Working Paper <https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2856502> accessed 06 May 2021.

³⁸ Petit discusses competition in broader digital ecosystems in the talk ‘Competition Rules for Big Tech and the Digital Economy’, given for CERRE, available on Youtube at: <<https://www.youtube.com/watch?v=DnRLMZEIRbM>> at minute 13:05.

³⁹ CERRE presentation of N Petit on moligopolies available on Youtube under the following link: <<https://www.youtube.com/watch?v=DnRLMZEIRbM&t=2416s>> accessed 20 June 2020.

⁴⁰ In his work, Petit discusses hate speech, fake news and privacy infringements specifically; unlike market-failure-based harms, he sees these three as harms suitable to be addressed through ex-ante regulation. See N PETIT (n 36), Chapter VI.

Considering this ‘bigger picture’ model introduced by Petit,⁴¹ but not losing sight of contrarian views,⁴² we observe that, although ex-ante data-sharing mandates embedded in economic thinking are in principle an appropriate regulatory response, this is not where policy seems to be going in practice. Instead of a theory-inspired approach (either *broad* or *no* ex-ante data-sharing mandates as we saw above), the DMA proposal opts for a competition-inspired piecemeal approach of narrow ex-ante data sharing mandates. This opens up space for remedial maneuvering under potential ex-post enforcement against data-driven platforms, where both heavier mandates or less intrusive alternatives inspired by business strategy thinking can be considered. A fine-grained analysis will be needed in that respect, given new political and business-led data-sharing initiatives, novel techniques for generating synthetic data, and companies’ increasing skill at drawing powerful conclusions from small data sets.

Finally, both ex-ante and ex-post data-sharing mandates are also relevant at the stage before deciding on remedies – namely, anticompetitive foreclosure assessment. There, the former inform the building of an appropriate counterfactual by being part of the ‘conditions on the relevant market’⁴³ and the latter directly stem from the findings of the counterfactual foreclosure assessment (provided a proportionality test has also been performed).⁴⁴

In order to develop these points, we first explain data sharing mandates in general and inventory their *alternatives* (Section II.2). Section II.3, in turn, discusses the *narrow ex-ante data-sharing mandates* proposed in the DMA. Section III then proposes that the latter be employed in the building of counterfactuals for the purposes of effects/foreclosure analysis that then feeds into the remedial stage and informs the decision regarding the need for ex-post data sharing mandates. While the latter point (remedies need to logically/proportionally flow from the infringement) is established in literature,⁴⁵ counterfactual thinking at the level of anticompetitive foreclosure in ex-post competition analysis under Article 102 TFEU remains a rather unexplored topic. Although suggested in a Commission Guidance Paper,⁴⁶ courts have not yet explicitly engaged with this standard under Article 102 TFEU and scholars are not vocal about it either. Hence, in Section III this contribution shows how picking up the

⁴¹ N PETIT (n 36) Chapter VI.

⁴² J Prüfer and I Graef (n 21).

⁴³ Communication from the Commission — Guidance on the Commission's Enforcement Priorities in Applying Article 82 of the EC Treaty to Abusive Exclusionary Conduct by Dominant Undertakings [2009] OJ C 45/02 (hereinafter ‘Guidance Paper’) para. 20.

⁴⁴ Lianos (n 6).

⁴⁵ See V Turner, ‘Regulation 2: Remedies in Antitrust Cases under EU Competition Law’ (2020) 11 (8) *Journal of European Competition Law and Practice* 430 I Lianos (n 6). Finally, see also W Sauter, *Coherence in EU Competition Law* (OUP 2016).

⁴⁶ Guidance Paper (n 43).

old proposal for counterfactual reasoning to establish foreclosure might work in the context of data-driven markets.

II.2. Data-sharing mandates and their alternatives

Data is a crucial asset without which many 21st century businesses cannot function properly. It has also come to feature prominently on the antitrust agenda on both sides of the Atlantic, with the EU⁴⁷ and its Member States⁴⁸ adopting respective legislation and the US Congress probing data-driven giants through formal hearings.⁴⁹

The algorithms underlying digital services and apps, connected devices, and industry 4.0⁵⁰ production facilities require data to work effectively. Thus, data is at the core of digital companies' business models⁵¹ and required for them to be competitive in the market. More data⁵² – at least up to a point – allow for constant improvements to the algorithms underlying apps, digital services and smart devices.⁵³ This, in turn, enables companies to match the preferences of their customers ever more precisely.⁵⁴ For example, search engines that collect more user data provide more relevant search results.⁵⁵ Social networks with large data repositories show more interesting content and provide better friend suggestions to their users. Data-rich online retailers suggest the most desirable products to their users.

Additionally, better preference matching abilities drive the acquisition of ever more data.⁵⁶ Users who see highly relevant, personalized content are more likely to engage with this content. This user engagement results in even more data being created, which enables even better algorithms and

⁴⁷ See Digital Markets Act (n 1).

⁴⁸ For example, in Germany, the new competition act pays attention to data at several levels: market definition and also establishment of effects (Section 18.3(3) of the 10th German Competition Act (10. GWB Novelle)). An additional provision that deals with unfairness and imbalance (not competition infringement per se) is also inserted in s. 20 of the same act in order to give rise to potential data sharing obligations.

⁴⁹ The Congressional hearing of the GAFSA companies from 30 July 2020 and the concluding comments made by Chairman Cicilline point in the direction of impending ex-ante regulation to be imposed by means of US antitrust law as well. See, to that effect, the exact statement in the following video of the Congressional Hearing <<https://judiciary.house.gov/calendar/eventsingle.aspx?EventID=3113>> at 5:27:00.

⁵⁰ The term 'industry 4.0' refers to the digitization of manufacturing services, which constitutes the fourth revolution that has occurred in manufacturing after the introduction of mechanization, assembly lines powered by electricity, and automation and robots.

⁵¹ V Kathuria and J Globocnik (n 5) 511.

⁵² The requirement for more data does not always mean that more fields have to be added to an existing dataset. Depending on the context, adding more examples to an already existing field, i.e. making the dataset deeper instead of wider, may have a larger positive impact on the accuracy of the algorithms being fed by the data than the addition of a new field. In other words, sometimes the *scope* of the data matters more than the *scale*. See, e.g., A Lipeles, 'More Data Isn't Always Better' (*Toward Data Science*, 15 July 2019) <<https://towardsdatascience.com/ai-ml-practicalities-more-data-isnt-always-better-ae1dac9ad28f>> accessed 06 May 2021.

⁵³ V Kathuria, 'Greed for Data and Exclusionary Conduct in Data-driven Markets' (2019) 35 Computer Law and Security Review 89.

⁵⁴ V Mayer-Schönberger and T Ramge, *Reinventing Capitalism in the Age of Big Data* (John Murray Publishers Ltd 2018).

⁵⁵ A Ezrachi and ME Stucke, 'When Competition Fails to Optimize Quality: A Look at Search Engines' (2016) 18 Yale Law Journal of Law and Technology 70.

⁵⁶ V MAYER-SCHÖNBERGER AND T RAMGE (n 54).

therefore ever more precise preference matching abilities. A virtuous cycle (from the point of view of the companies that collect the data) ensues that allows firms that own large data repositories to collect ever more data, become ever more indispensable to their users, and therefore acquire ever more market power.⁵⁷ This dynamic is driven by data network effects as mentioned above: these network effects create a winner-take-all (or winner-take-most) dynamic in which data-rich companies become ever more powerful. Data network effects are indirect and differ from direct network effects, or people network effects,⁵⁸ which occur when an additional user makes a product or service more valuable for existing users. Products or services exhibiting data network effects do not depend on the addition of new users to increase in value: while the addition of new users is *sufficient* to generate additional data points and thus enhance the value of the product or service, it is not *necessary* to add new users for this to happen. The engagement of existing users with the product or service is enough for new data to be generated and the value of the product or service to be increased. The more different services (such as email, messaging, video, music, and telephony) a given digital platform offers, the higher the engagement of the users with the platform and the more new data the platform can collect.

Several consequences follow from this. First, products and services that display both data and people network effects do not need to grow their user base in order to become more valuable for existing users. Users' engagement with the product or service is enough to lead to an increase in value. Second, if the user base of a product or service exhibiting both people and data network effects does grow, the value of the product or service to existing users increases at an even faster rate. In that case, people and data network effects combine to make the product or service ever more valuable to existing users through improvements in preference matching and through growth in the number of people to whom existing users can connect. Third, because a product or service exhibiting data network effects increases in value every time existing users engage with it, it is exceedingly hard for new entrants in the same market to steal away users from the product or service in question.⁵⁹

In other words, products or services displaying data network effects can build data moats that make it very difficult for new entrants in the market to compete.⁶⁰ In such a scenario, the product or service

⁵⁷ ME Stucke and A Ezrachi (n 55).

⁵⁸ Direct network effects can also be called people network effects because they occur when a product or a service becomes more valuable to its users as more people use it.

⁵⁹ ME Stucke and A Ezrachi (n 55); V Kathuria (n 53).

⁶⁰ As Casado and Lauten point out, data moats may not be durable. There are several reasons for this, including the diminishing marginal utility of data, the non-proprietary nature of certain data, and the possibilities for amplifying small data sets with synthetic data. However, even if a data moat is not durable, the time during which a company is protected from competition thanks to a data moat might be enough to reach and cement a dominant position in the market. Moreover, data network effects might combine with people network effects, allowing the company to build up a durable 'people moat' next to a data moat that makes it very difficult for competitors to gain market share, inhibiting competitors' growth and limiting opportunities for collecting the data they need to erode the dominant company's data

that first collects enough data to become very efficient at preference matching develops an ever-widening lead over competing products or services. This means that competition in the market becomes less and less dynamic until only very few firms – or even just one firm – are left.⁶¹ These dynamics have been argued to constitute market failures (albeit not of a permanent nature), leading some legal scholars and economists to suggest interventionist measures to restore the balance of market forces in data-driven contexts.⁶² The remedy, according to these scholars, is to mandate data-driven companies that have captured a certain market share to make (a chunk of) their data available to competitors. If everybody has the same data, the reasoning goes, everybody has the same chance of winning in the market, *ceteris paribus*.

While data-sharing mandates may seem like an “optimal remedy”⁶³ at first glance, the central question is whether the potential market failures introduced by data network effects are really irreparable and correction of the market by other means is impossible. After all, data-sharing mandates are heavy-handed interventions that might have negative consequences for innovation and dynamism in digital markets. For one, they might undermine incentives for companies to try and collect large data sets in order to develop sophisticated preference matching algorithms and get ahead of their competitors. This problem, although not related to data but to access to incumbents’ telecomm networks, has already come to the fore in competition cases within regulated industries.⁶⁴ Although not (yet) accepted by courts, Geradin maintains that what can discredit mandatory access to a network is evidence showing efficient own rollout by newcomers on telecomm markets: ‘[i]t is well known that facilities-based operators are much better able to compete than service-based competitors relying on the incumbent’s network’.⁶⁵ At its core, this suggestion involves a counterfactual demonstration that discredits the initially alleged essentiality of network access. A similar reasoning, as shown in Section III.2 below, can also be employed to ex-post competition assessment of data-driven harm and the decision for or against subsequent imposition of ex-post data sharing mandates.

Data sharing mandates might also punish particularly well managed, successful companies that had the foresight, innovation prowess, talent, and technologies to start accumulating, processing, and analyzing data early on and thereby achieve a lead over the competition. Thus, ex-ante regulation

moat. For more information on data moats and their (lack of) durability, see M Casado and P Lauten, ‘The Empty Promise of Data Moats’ (Andreessen Horowitz, 09 May 2019) <<https://a16z.com/2019/05/09/data-network-effects-moats>> accessed 06 May 2021.

⁶¹ On this point, see I Graef, ‘Differentiated Treatment in Platform-to-Business Relations: EU Competition Law and Economic Dependence’ (2019) 38 Yearbook of European Law.

⁶² J Prüfer and I Graef (n 21).

⁶³ V Kathuria and J Globocnik (n 5).

⁶⁴ Judgment of 17 December 2015, *Telekomunikacja Polska v Commission*, T-486/11, ECLI:EU:T:2015:1002.

⁶⁵ D Geradin and I Girgenson, ‘The Counterfactual Method in EU Competition Law: the Cornerstone of the Effects-based Approach’ in Bourgeois and Waelbroeck (ed), *Ten Years of Effects-Based Approach in EU Competition Law* (Bruylant 2012).

through data-sharing mandates should only be applied when there is no other way to stop or counteract the mechanism leading to the market failure in question, i.e. the observed market failure is nearly irreparable. Should it, in hindsight, be needed to impose further data-sharing obligations for novel data-driven harms on the same or new infringers, these could be dealt with under a flexible, counterfactual ex-post competition assessment detailed in Section III.2.⁶⁶

As currently proposed by Prüfer and Graef⁶⁷ as well as Mayer-Schönberger and Ramge,⁶⁸ and as reflected in the DMA, data-sharing mandates have a concrete scope and a predetermined form, making them good tools for ex-ante competition enforcement. Still, one needs to keep in mind that there are emerging political and business initiatives that might reduce the need for mandated data sharing in the first place. For one, France, Germany, and other European partners have invested in the GAIA-X federated cloud infrastructure,⁶⁹ which allows smaller companies to gain access to the data of larger firms that these firms share (albeit on a voluntary basis). In addition, the European Union made it mandatory in the General Data Protection Regulation (GDPR) that companies make user data portable, not only allowing data subjects to obtain the data that a data controller holds on them but also enabling the transfer of that data to another data controller. This empowerment of data subjects fosters competition between different data controllers as a welcome side effect.⁷⁰ There are moreover voluntary data-sharing initiatives driven by industry itself such as the ‘Open Data Initiative’⁷¹ and the ‘Data Transfer Project.’⁷² Of course, as numerous regulatory governance scholars have pointed out,⁷³ it is not uncommon for business actors to come up with their own rules in order to prevent regulatory advances by the government (which often go further than private initiatives). Thus, voluntary initiatives might not be as well designed and inclusive as public initiatives. For example, the companies involved in the ‘Open Data Initiative’ are mostly large and medium-sized companies, not small startups, limiting the benefits of the initiative for smaller firms. Those caveats notwithstanding, private data-

⁶⁶ Please note that Article 10 DMA explicitly allows for broadening of its current narrow ex-ante data-sharing mandates. However, since the DMA applies to multiple companies at the same time, broadening the mandates will only be possible when a market-wide issue has been identified. Hence, the DMA cannot offer the company-specific, tailor-made solutions that ex-post competition enforcement does by design. Therefore, even in a future with narrow mandated ex-ante data sharing obligations, ex-post competition assessment and eventual imposition of additional remedies of this caliber will be most suitable.

⁶⁷ J Prüfer and I Graef (n 21).

⁶⁸ V MAYER-SCHÖNBERGER AND T RAMGE (n 54).

⁶⁹ For more information on GAIA-X, see <<https://www.data-infrastructure.eu/GAIA-X/Navigation/EN/Home/home.html>>.

⁷⁰ R Janal, ‘Data Portability – A Tale of Two Concepts’ (2017) 8 (1) *Journal of Intellectual Property, Information Technology and E-Commerce Law* The mandate of data sharing by a competition authority might run afoul of the GDPR, however. For a discussion of this issue, see V Kathuria and J Globocnik, V MAYER-SCHÖNBERGER AND T RAMGE (n 5) 524.

⁷¹ For more information on the Open Data Initiative, see <<https://techcrunch.com/2019/03/27/microsoft-adobe-and-sap-prepare-to-expand-their-open-data-initiative/>>.

⁷² For more information on the Data Transfer Project, see <<https://datatransferproject.dev/community>>.

⁷³ T Büthe, ‘Private Regulation in the Global Economy: A (P)Review’ (2010) 12 (3) *Business and Politics* See also DP Baron, ‘Self-Regulation in Private and Public Politics’ (2014) 9 (2) *Quarterly Journal of Political Science* and D Vogel, ‘The Private Regulation of Global Corporate Conduct: Achievements and Limitations’ (2010) 49 (1) *Business and Society*.

sharing initiatives of this kind can counteract the winner-take-all dynamics created by data network effects and produce at least some of the same results as mandated data-sharing agreements.

However, data sharing might not even be necessary to achieve welfare-enhancing effects in data-driven markets. Thus, industry experts have identified various business and technical strategies that enable small companies to bootstrap the ‘minimum viable corpus’⁷⁴ of data that is needed to begin developing sophisticated algorithms (e.g. internalizing early users’ externalities by offering them something in return for their data; using mechanisms such as web crawling to automate data capture from available sources; relying on transfer learning to repurpose data from other domains; and programmatically creating data to train against).⁷⁵ The last point refers to the possibility of generating large data sets with synthetic data, i.e. data artificially created on the basis of a generalized statistical approach that removes personally identifiable information from datasets. As one expert points out, ‘[t]his lowers the barrier to deploy data science by removing the need for vast volumes or real data,’⁷⁶ in effect allowing small companies to amplify their datasets and compete better with large, data-rich companies.

Proponents of data-sharing mandates might reply that none of the above-mentioned methods, whatever their merits, ensure that smaller firms have access to similarly large-scale data sets as established data-driven firms. Such access might not be needed, however (as might be implicitly acknowledged by those advocating the sharing of only a slice of established companies’ data with smaller competitors). Thus, it has long been known that while more data is always strictly welfare enhancing,⁷⁷ there are at least certain scenarios in which the incremental cost of more data goes up after a certain point while collecting or analyzing more data does not result in a more accurate algorithm.⁷⁸ This means that, after that point has been reached, gathering more data is not economical and therefore makes very little sense. Thus, while larger datasets are always at least as valuable as smaller datasets (ignoring their higher costs),⁷⁹ a smaller dataset will often perform just as well in terms of generating an accurate algorithm. In many contexts, smaller datasets can therefore be as helpful as large data sets and reach the right conclusions faster, more reliably, and at lower cost.⁸⁰ As Bryson

⁷⁴ M Casado and P Lauten (n 60).

⁷⁵ Ibid.

⁷⁶ T Macaulay, ‘What Is Synthetic Data and How Can It Help Protect Privacy?’ (*Tech Advisor*, 01 October 2019)

<<https://www.techadvisor.co.uk/news/small-business/what-is-synthetic-data-how-can-it-help-protect-privacy-3789108/>> accessed 06 May 2021.

⁷⁷ J Prüfer and I Graef (n 21).

⁷⁸ M Casado and P Lauten (n 60). See also S Dumais et al, *Web Question Answering: Is More Always Better?* (Proceedings of the 25th Annual International ACM SIGIR Conference on Research and Development in Information Retrieval 2002).

⁷⁹ The reason is that, with a larger data set, a company always has the option to use a smaller subset. We thank Joachim Henkel for making this point.

⁸⁰ A Lipeles (n 52). See also M Casado and P Lauten (n 60).

pithily puts it: '[M]uch data is redundant except for surveillance purposes (or even for those).'⁸¹ For example, researchers at Stanford University used a 'small data' model based on high-dimensional statistics, which maximizes the joint predictive power of all data in a data set, to significantly reduce the number of tests needed to identify a range of common diseases.⁸² Industry developments might decrease the need for big data even further. Thus, Renda points out that the move to edge computing and to local data collection, processing, and analytics will bring about a number of changes, including that 'small data become more important than big data; data storage occurs mostly at the edge and in devices; and [core] distributed architectures are possible, with possible consequences also for competition.'⁸³

Thus, as laid out above, while data network effects lead to the accumulation of market power, the potential market failures introduced by data network effects are not irreparable and correction of the market is theoretically possible. In practical terms, for one, a number of political and business initiatives have been launched that result in data being shared among companies and therefore counteract the network effects that drive market dominance in data-not even be necessary to ensure competition in data-driven markets. Finally, there are several practical difficulties regarding the implementation of data-sharing mandates. For one, it is unclear how exactly large digital platforms would share data with smaller competitors. "Fresh" data is often (though not always) more valuable than older data, so one key question is whether data would be shared in real-time. Another issue is how smaller companies with fewer server capacities would handle the immense server storage space and processing requirements associated with huge datasets. It is also worth mentioning that large data sets will only be useful if companies actually have the talent and technology to analyze this data, draw the right conclusions from it, and write sophisticated algorithms that result in performance improvements (i.e. in better preference matching abilities). Given that large data-driven platforms pay among the best salaries in the industry, smaller competitors might struggle to attract the right employees to actually do something useful with the data shared by dominant digital platforms.

The above discussion puts in perspective the current Commission proposals for ex-ante regulation of digital markets and acknowledges that – although regulation is certainly one appropriate tool for going after data-driven market power and concomitant tipping, it is not exclusive – less intrusive alternatives

⁸¹ J Bryson, 'Contribution to the Consultation on the White Paper on Artificial Intelligence – A European Approach' (*Adventures in NI*, 14 June 2020) <<https://joanna-bryson.blogspot.com/2020/06/regulating-ai-as-pervasive-technology.html>> accessed 06 May 2021.

⁸² L Simmons, 'The Surprising Power of Small Data' (*Insights by Stanford Business*, 20 November 2018) <<https://www.gsb.stanford.edu/insights/surprising-power-small-data>> accessed 06 May 2021.

⁸³ A Renda, 'Single Market 2.0: The European Union as a Platform' in S. Garben and I. Govaere (ed), *The Internal Market 20* (Hart Publishing 2021).

to data sharing remedies remain available. As explained in what follows, these alternatives will likely not inform the ex-ante enforcement regime proposed in the so-called Digital Markets Act, but can certainly be relevant under subsequent ex-post investigations of digital giants, specifically when constructing counterfactual scenarios under the assessment of anticompetitive foreclosure. We return to the latter point in Section III, while we proceed to explain the approach of the DMA to data-sharing mandates next.

II.3. Data-sharing mandates under the DMA: a narrow approach

The DMA proposal is part of a massive policy effort called European Digital Strategy⁸⁴ that identifies, among others, the EU objectives of i) achieving excellence and trust in artificial intelligence and ii) the promotion of a fair and competitive (read: contestable) digital economy. Within the latter cluster, the DMA aims specifically at reigning in powerful digital platforms designated as ‘gatekeepers’⁸⁵ – a term referring to significant market power with the potential to lead to market tipping. Furthermore, the legislative proposal provides for ex-ante intervention, i.e. before harm on the market materializes. The ex-ante nature of the proposal is conceptually consistent with the idea of *preventing* market tipping as discussed above, while the enforcement design is inspired by the UK’s decade-old experience with prospective market monitoring through market studies and investigations.⁸⁶ At this juncture, we want to also point out that in its Articles 5 and 6, the DMA outlaws a large array of practices, but here we exhaustively comment only on those that have the most direct bearing on data-driven indirect network effects – namely, data-sharing mandates (we do not discuss tangentially related practices, such as leveraging, conflicts of interest, self-preferencing, etc).⁸⁷

The core of the DMA proposal is contained in Articles 5 and 6, which inventory lists of practices that are outlawed should they be performed by a ‘gatekeeper’ provider of a core platform service. Several of these provisions have bearing on market tipping caused primarily by data-driven indirect network effects,⁸⁸ but all of them are rather piecemeal and most borrow from existing specific competition cases.⁸⁹ The provisions that deal with data-sharing obligations comprise four⁹⁰ out of 18 obligations in

⁸⁴ For more information on the European Digital Strategy, consult the Commission website at the following link: <<https://ec.europa.eu/digital-single-market/en/content/european-digital-strategy>>.

⁸⁵ See Article 3 of the DMA.

⁸⁶ M Farley and PJ Slot, *An Introduction to Competition Law* (Hart Publishing 2017).

⁸⁷ For discussion of the latter issue, see D Condorelli and J Padilla, ‘Harnessing Platform Envelopment through Privacy Policy Tying’ (2020) 16 (2) *Journal of Competition Law and Economics*.

⁸⁸ See specifically the following articles that have direct bearing on data-driven indirect network effects: Art. 5 a)-c); Art. 5 e); Art. 6 a) and 6 h)-j).

⁸⁹ Article 5 a) is inspired by the Facebook/Whatsapp merger, Article 5 b) by the case law on MFN clauses, Article 5c) by the recent Apple investigation opened by the European Commission, Article 6.1.a) is based on the Google Shopping case.

⁹⁰ Article 6a) DMA, Article 6h) DMA, Article 6 i) DMA and Article 6j) DMA.

total and, although most of them are not inspired by ongoing competition cases, they do seem to track individual business complaints against data practices of digital gatekeepers.⁹¹ Hence, a point for improvement for the DMA might be the introduction of a more integrated approach that draws less heavily from competition precedent or complaints and more from theory. Thus, the proposal could have introduced a broad data-sharing mandate,⁹² or none at all,⁹³ our preference going for the latter option as explained above. Additionally, it is not clear what kind of data will be subject to sharing and when the GDPR will come into play, the latter being applicable to cases where the data to be shared is not anonymized.

As already mentioned, the Commission seems to be basing itself in practice, which invariably leads to a piecemeal approach and to narrow data-sharing obligations without further delineation. Under the current Articles 6 (1)(h) and 6 (1) (i), the obligations imposed are for i) portability of user data and ii) provision, upon request, of queries by specific business users regarding data ‘that is provided for or generated in the context of the use of the relevant core platform services by those business users.’⁹⁴ Article 6 (1) (j) applies to providers of internet search engines only and there the obligation for data provision is the broadest, namely ‘access on fair, reasonable and non-discriminatory terms to ranking, query, click and view data in relation to free and paid search generated by end users on online search engines of the gatekeeper [...]’.⁹⁵ Finally, Article 6 (1) (a) is not a positive mandate, but a negative obligation on gatekeepers to refrain from using non-publicly available data generated by business users in competition with these same business users.

While, according to Lundqvist, ‘the combination of Articles 6 (1) (a), (h) and (i) creates a compulsory access and use regime [...] stopping just short of a property right’, he also observes the actual ability of business customers of platforms to enforce in the current DMA setup ‘remains a bit unclear’.⁹⁶ In particular, the relationship with legislation potentially blocking the type of data sharing envisioned in the above DMA provisions (such as the GDPR) leaves a lot to speculation. Therefore, the concern with the above three provisions taken as a whole is that they do not have teeth in practice. By contrast, the issue with Article 6 (1) (j) is one of too narrow a scope to ensure the DMA’s objectives of fairness and contestability. In that sense, in a recent contribution Graef and Prüfer maintain that the provision ‘does

⁹¹ For instance, Article 6a) does seem to be inspired by Amazon’s ‘conflict of interest’ practices of duplicating successful products of competitors and selling them in competition with the latter.

⁹² As advocated by Prüfer (n 23).

⁹³ As advocated by PETIT (n 36).

⁹⁴ DMA, Article 6 i).

⁹⁵ DMA, Article 6 j).

⁹⁶ B Lundqvist, ‘Editorial: The Proposed Digital Markets Act and Access to Data: A Revolution, or Not?’ (2021) 52 *International Review of Intellectual Property and Competition Law*.

not provide a structural solution either, considering that the scope of the duty is restricted to search data and to a few large online platforms acting as gatekeepers.⁹⁷

All in all, when it comes to the current data-sharing mandates provided in the DMA draft, it seems fragmentation, uncertainty and under-inclusiveness leave the door open for consideration of data sharing mandates as tailor-made ex-post remedies should companies already subject to the DMA also happen to infringe competition law. We see this situation as an opportunity for ex-post competition enforcement to step in and – through careful counterfactual assessment – iron out potential dissonance between ex-ante and ex-post enforcement on data-driven digital markets.

⁹⁷ I Graef and J Prüfer, 'Governance of Data Sharing: a Law and Economics Proposal' CentER Discussion Paper 2021-004 <https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3774912> accessed 06 May 2021.

III. The case for a strengthened counterfactual causation test in ex-post competition enforcement of digital markets

Counterfactual analysis is a type of causal test that law borrows from the social sciences and humanities.⁹⁸ The test requires the following logical connection between two events: ‘Event E counterfactually depends on C iff,⁹⁹ if C were not to occur, E would not occur.’ This logical postulate is derived from the realm of philosophy.¹⁰⁰ Translated to the field of EU competition law and the abuse of dominance doctrine that is relevant for digital gatekeepers, it would require a causal demonstration as follows. Once the law has identified a position of market dominance and a possible abuse thereof, the enforcers abstract themselves from the alleged abuse and construe the economic picture that would have prevailed had the abuse not occurred. If the market conditions remain uncompetitive even after the alleged abuse is removed from the picture, no counterfactual causal connection can be established; if the conditions move to a competitive equilibrium, though, a counterfactual connection is established. This basic model has several variations in competition law that we will examine in turn in Section III.2; the commonality between them is that the concomitant analysis is inherently about isolating the potentially anti-competitive *effects* of a practice from other causal factors. Hence, a counterfactual assessment allows for a higher level of certainty in corroborating or dismissing the anticompetitive effects of an impugned practice.

In light of impending ex-ante regulation of digital markets, we argue that addressing competition issues bound to emerge ex-post¹⁰¹ should entail going back to the above-described and often-neglected concept of ‘counterfactual analysis’ as introduced in the 2009 Commission’s Article 102 Guidance Paper.¹⁰² In particular, should the ex-post antitrust issue constitute a (novel)¹⁰³ data-driven harm, enhanced attention needs to be paid to the performance of an effects (foreclosure) counterfactual assessment under Article 102 TFEU. Specifically, such an action should focus on the context within

⁹⁸ That the understanding of a ‘counterfactual’ is identical in both social sciences (i.e. psychology) and the humanities (i.e. philosophy) has been demonstrated by several scholars. See, for instance, A Lagnado and T Gerstenberg, ‘Chapter 29: Causation and Legal Reasoning’ in M. Waldmann (ed), *The Oxford Handbook of Causal Reasoning* (OUP 2017).

⁹⁹ Iff = if and only if (expresses the need that a condition A is both necessary and sufficient for an effect B to materialize).

¹⁰⁰ For this definition, see the lecture of Margaret Talbot, ‘The Counterfactual Theory of Causation’, available on Youtube at: <<https://www.youtube.com/watch?v=g3l-17cGW6E>>, at minute 17:00.

¹⁰¹ As Geradin and Monti explain, ex-post enforcement on digital markets is not going to seize once the DMA ex-ante regime enters into force. For the former viewpoint, see D Geradin, ‘What will be the Role of EU Competition Law in a Post-DMA Environment?’ (*The Platform Law Blog*, 02 February 2021) <<https://theplatformlaw.blog/2021/02/02/what-will-be-the-role-of-eu-competition-law-in-a-post-dma-environment/>> accessed 06 May 2021 For the latter viewpoint, see Monti (n 30).

¹⁰² See Guidance Paper (n 43).

¹⁰³ Even if the harm is not novel, but already existing, it can come under the purview and be sanctioned under the ex-post competition framework (on top of an already existing ex-ante prohibition). This will likely not go against the *ne bis in idem* principle enshrined in Article 50 of the Charter of Fundamental Rights and explicitly referred to in the DMA (recital 71). The reason for this is the fact that digital regulation under the DMA and the EU competition regime are separate legal regimes with different objectives (fairness and efficiency, respectively). In this case, there is no double jeopardy (by analogy, the same anticompetitive conduct can be sanctioned both under administrative and under civil law).

which the alleged foreclosure takes place and – importantly – inquire into the existence of prior regulatory obligations under the DMA.¹⁰⁴ These obligations should in no way abridge a fully-fledged competition analysis under Article 102 TFEU as the recent *Slovak Telekom* case decided by the CJEU seems to suggest.¹⁰⁵ To the contrary, they should prompt an even more rigorous ex-post analysis given the dynamic nature of data-driven markets, a fact that the Commission itself acknowledges in its DMA proposal. For example, if a dominant two-sided platform has suddenly sharply increased prices for certain advertisers, any inquiry into the platform’s behavior should take into account that the platform is required to share a chunk of its data with its competitors under DMA obligations, a fact that might have decreased its ability to monetize the shared data and prompted it to raise prices for advertisements based on proprietary data.

Hence, we suggest taking seriously the so far underappreciated proposal of the European Commission from its Article 102 Guidance Paper of using counterfactuals to establish the causal link between abusive conduct and anticompetitive effects (foreclosure) in ex-post antitrust analysis. The results of this analysis, performed with extra sensitivity to competitive context as stipulated above, can and should also be used to inform the selection of an appropriate remedy as a second step. Thus, if the dominant platform from the example above is found to have raised prices on certain advertisers because of its inability to monetize all of its data thanks to ex-ante data-sharing obligations, an appropriate remedy might be to exempt the company from mandated data-sharing for a given amount of time.¹⁰⁶ This counterfactually-based two-step analysis is meant to lead to nuanced and careful assessment as it reflects the so-called ‘more economic’ approach in antitrust, which remains very much relevant on digital markets¹⁰⁷ and is exclusively concerned with the actual effects of an impugned practice. To perform this analysis rigorously in an ex-post enforcement setting will be all the more important when the DMA becomes a reality, given that the latter is meant to ensure contestability (proper market structure) and therefore is not concerned with the question of anti-competitive effects. Hence, rigorous effects-based ex-post competition enforcement will become a crucial complement for ex-ante rules whereby enforcers will have the chance to provide necessary coherence with the *status quo ante* prescribed by the DMA.

¹⁰⁴ The need to look at context for the purposes of foreclosure analysis is well-established in case law, as also reflected in the Article 102 Guidance Paper.

¹⁰⁵ Judgment of 25 February 2021, *Slovak Telekom*, C-857/19, EU:C:2021:139.

¹⁰⁶ Please note that this proposed ‘rolling back’ of an ex-ante remedy cannot be immediately performed by the competition authority acting in its capacity of an ex-post regulator, as this will mean the latter enters the jurisdictional domain of the ex-ante regulator. For this point, see I Lianos (n 6) 435. An appropriate mechanism that can allow for such ‘rolling back’ would be a recommendation to that effect issued by the competition authority to the ex-ante regulator, with the latter having the latitude to decide whether or not to follow the suggested course of action.

¹⁰⁷ The ‘more economic’ approach is still alive and kicking even when it comes to digital markets. See H Hovenkamp, ‘Is Antitrust’s Consumer Welfare Principle Imperiled?’ (2019) 45 (1) *Journal of Corporation Law*.

This function of ex-post competition enforcement will be of paramount significance once the DMA enters into force, given recent worrisome experiences with the interaction between competition enforcement and the neighbor domain of telecommunications regulation, which is enforced ex-ante. In the recently decided *Slovak Telekom* case, the first instance court (the General Court (GC)) has made and won the argument that – because the defendant is regulated ex-ante under a telecoms regime – there is no need to apply the ‘indispensability’ criterion to it under an Article 102 TFEU refusal to supply analysis. While ‘indispensability’ is the most crucial prong of the classical abuse test for refusal to supply,¹⁰⁸ according to the logic of the GC, if an undertaking is regulated ex-ante then its services are by definition ‘indispensable’. This is so because the finding of ‘indispensability’ of a certain service or infrastructure is a prerequisite for the latter being subjected to ex-ante regulation. However, as Geradin and O’Donoghue observe, the real issue is ‘[...] whether the substantive conditions under which *ex ante* regulation was imposed were the same as the conditions for *ex post abuse*.’¹⁰⁹ Given that the two regimes have different objectives and enforcement designs, the assessment of the question whether a service or infrastructure is ‘indispensable’ is bound to vary. Hence, a finding of ‘indispensability’ under one regime cannot be automatically used to inform the other. Otherwise, one risks a leap of logic that abridges the antitrust test of refusal to supply in a dangerous way.

One also needs to keep in mind that cases shaping competition doctrine in the context of ex-ante regulation are quite dated at this point. Another example from telecommunications regulation illustrates this. In the early 2000s, in the *Deutsche Telekom* (DT) case,¹¹⁰ a choice was made to punish DT for allegedly abusive margin squeeze (leaving too narrow a spread between the regulated wholesale network access prices it charged to competitors and prevailing retail prices) under Article 102 TFEU. At the same time, an obvious regulatory solution was readily available. As Dunne puts it ‘[the] rational solution would have been to fix the broken regulation and reduce wholesale prices to the competitive level. Unfortunately, the Commission chose to pursue an abuse of dominance case against DT [...]’.¹¹¹ In light of the above cases, it is not unthinkable that similar dissonances will apply to the interaction between the DMA and ex-post competition enforcement on digital markets. Hence, to prevent such dissonances and the concomitant legal uncertainty for regulated companies, a flexible counterfactual approach to the ex-post assessment of anti-competitive effects (and remedies) is needed.

¹⁰⁸ Judgment of 26 November 1998, *Oscar Bronner GmbH & Co. KG v. Mediaprint Zeitungs*, C-7/97, ECLI:EU:C:1998:569. See also R Whish and D Bailey, *Competition Law* (OUP 2015).

¹⁰⁹ D Geradin and R O’Donoghue (n 16).

¹¹⁰ Judgment of 14 October 2010, *Deutsche Telekom AG v European Commission*, C-280/08 P, ECLI:EU:C:2010:603.

¹¹¹ N Dunne (n 18).

Before going into the details of our proposal for using counterfactual analysis at the levels of foreclosure assessment and remedies under Article 102 TFEU, two further general comments are in order. First, we are discussing the use of counterfactuals in light of data-driven market harms and data-sharing mandates as their potential remedies. This focus is conscious and based on the realization that most digital anticompetitive harms are (at least tangentially) related to data. However, our choice of focus does not make the insights below any less applicable to the broader domain of digital competition.

Second, we would like to clarify that the current problem with counterfactual causation in abuse of dominant position cases in the EU is the incoherent way in which the test is applied.¹¹² EU and national courts make sparing¹¹³ but inconsistent use of counterfactual reasoning, more often than not rejecting the method's relevance in abuse of dominance cases. This results in more confusion than clarity, which is unfortunate given that the counterfactual method can ensure that enforcers do not condemn deals in digital markets all too quickly. This, in principle, helps reduce false positives (incorrect convictions) and allows markets to operate efficiently in the long-run, especially once ex-ante regulation kicks in.

III.1. Causation in Article 102 TFEU

Digital giants and specifically their market distorting practices on the territory of the EU¹¹⁴ are covered by Article 102 TFEU – a provision with the primary purpose of prohibiting abuses of dominant position on the Internal Market. The structure of the general prohibition, which borrows elements from both tort and criminal law, requires that several elements are fulfilled before it obtains. For the purposes of the current argument, the following conditions are of importance. The first two are 1) the establishment of a *dominant position* on a specifically defined relevant market and 2) the *abuse of that position*, defined by its actual or potential anti-competitive effects on that market.¹¹⁵ Some scholars have posited that¹¹⁶ – contrary to what current EU law postulates – a 3) causal connection needs to be established between the dominance and abuse as well (i.e. proof is needed that the abuse happened in the process of exercising dominance). Especially in the context of digital markets, where harm can

¹¹² See, generally, LF Pace, *European Competition Law: the Impact of the Commission's Guidance Paper on Article 102* (Edward Elgar 2011).

¹¹³ In fact, an advanced search through Article 102 TFEU case law (curia.europa.eu) and Commission decisions (eur-lex.europa.eu) returned only 1 result per category (a court case and an administrative decision, respectively) where the term 'counterfactual' appeared.

¹¹⁴ Note that the EU also enforces competition law extraterritorially under the so-called 'effects' doctrine – if a practice does not happen on the territory of the EU but has repercussions/effects on it, then the EU can claim jurisdiction and enforce its competition rules. The last judgment to confirm this doctrine is *Intel*. Judgment of 6 September 2017, *Intel Corp. v European Commission*, C-413/14 P, ECLI:EU:C:2017:632.

¹¹⁵ R Whish, 'Chapter 5: Article 102' in R Whish and D Bailey (ed), *Competition Law* (OUP 2015).

¹¹⁶ T Schrepel, 'Repeal Continental Can' [2019] *Le Concurrenialiste*.

occur on a market different from the one where dominance exists, the argument goes, it is important to require proof of a causal connection between dominance and a suspected abusive behavior. Otherwise, one risks over-enforcement against de facto innocuous practices.¹¹⁷ However, these arguments do not engage with the established EU competition law principle that an undertaking in a dominant position has a ‘special responsibility’ not to harm competition, which already creates an obligation on powerful undertakings to tread carefully on their respective markets. The upshot is that if the said undertaking is shown to have behaved anti-competitively, the causal connection between dominance and abuse is presumed because the undertaking should have been more careful in its actions in the first place (special responsibility criterion). Therefore, one should not search for a causal connection between dominance and its abuse, but between the abuse and its effects on the market. This causal link between abuse and effects on the market is a core part of the test under Article 102, the law requires it, and we argue it should be established by means of counterfactual reasoning only.

Before going further with this suggestion, it should be noted that while a causal link between abuse and effects on the market has to be established, there is no hard obligation as to what kind of causal test is used in this respect.¹¹⁸ As Veljanovski explains, the current case law on dominance mostly uses ‘benchmarks’ that serve as shortcuts to establish causation.¹¹⁹ In other words, if the defendant manages to put forward a credible alternative story to an anti-competitive effects allegation by the Commission, this suffices. This rather lax standard also explains problems at the remedial stage of Article 102 TFEU cases, for which practice shows remedies that do not work as intended – namely, they miss the mark of restoring effective competition.¹²⁰ Hellström¹²¹ attributes this fact to the phenomenon of ‘mirroring’, reasoning as follows ‘[...] mirroring the abuse may be the intuitive remedy of choice. However, in the event that this intuitive remedy is not likely to be successful or effective, one must further explore what instruments are at the Commission’s disposal—taking *the effect* of the infringement as a starting point.’¹²² Hence, establishing the actual *effects* of the infringement at the foreclosure stage – an exercise for which counterfactual analysis is singularly suitable – is of pivotal

¹¹⁷ M Ali, *Rethinking Abuse of Dominance in the Light of Causation* (Master Thesis defended at Utrecht University, 2020).

¹¹⁸ C Veljanovski, ‘Counterfactual Tests in Competition Law’ (2010) 4 *Competition Law Journal*.

¹¹⁹ C Veljanovski, ‘Metcash, Market Power and Counterfactuals’ (2012) *Australian Business Law Review*.

¹²⁰ Among others, see N Petit and M Gal (n 29).

¹²¹ P Hellström (n 4).

¹²² For example, in cases in which a dominant company’s proprietary ownership of large amounts of data is thought to have resulted in supracompetitive prices for advertisers, the intuitive remedy may be to require the dominant company to share data (or *more* data if there is already a limited ex-ante data sharing mandate) with its competitors in order to allow these competitors to become better at preference matching. However, this remedy might not work because the dominant company has a lot of users thanks to direct (or people) network effects. Because these users benefit from being linked to many other users (as per the definition of a direct network effect), they will not switch to the dominant company’s competitor even if that competitor becomes much better at preference matching thanks to the data being shared by the dominant company. This means that advertisers will still prefer to advertise on the dominant company’s platform, as they can reach more users there. A (more extensive) data-sharing mandate therefore will not be a suitable remedy in this case and another remedy should be considered that addresses the fact that the dominant company has a larger number of users than its competitors thanks to direct network effects.

importance for being able to come up with working remedies at the next stage of the assessment of an impugned practice. While we will examine the precise mechanism that we suggest for establishment of remedies in Section III.3 below, we first offer a practical demonstration of the centrality of the causation concept and the importance of using a counterfactual to establish causal link between abuse and its effects.

Let us take the *Post Danmark I* case of the CJEU as an example.¹²³ Therein, the court did acknowledge the centrality of the so-called ‘as-efficient-competitor’ (AEC) test, itself a counterfactual construction,¹²⁴ in order to gauge the anti-competitive effects of discriminatory pricing by the defendant dominant undertaking (Post Danmark). However, the counterfactual AEC test itself was performed by means of an abridged, or ‘benchmark’ analysis as Veljanovski puts it. Namely, the established case law test for abusive below-cost pricing was applied,¹²⁵ using the cost data of the dominant undertaking. Therefore, a full-fledged analysis of the market was not performed – specifically, the actual costs of competitors could also have been looked at, with the aim to see whether they could truly survive competition in the long run. Instead, the court signaled that it was convinced by the argument of the defendant – namely, that during the period of alleged abuse, its competitor ‘managed to maintain its distribution network despite losing the volume of mail related to the three customers involved and managed, in 2007, to win back the Coop group’s custom and, since then, that of the Spar group.’¹²⁶ It is not difficult to see that arguing that your competitor managed to survive does not exclude the possibility of market power abuse on your side, nor of further negative effects on the market beyond the setbacks suffered by your competitor. In this particular case, a true counterfactual approach through the AEC test could have extended to examining actual competitor costs, but also to modelling market conditions without the alleged abusive behavior. This is all the more important, given that a market connected to the relevant market in the case was subject to regulation – a fact that, as discussed in the case itself, had an impact on the dominant undertaking’s costing structure (but likely also on the access conditions to the *in casu* relevant market). An explicit counterfactual assessment of this latter point did not figure in the decision while it could have shed more light on the effects of the alleged anti-competitive behavior. All in all, we believe that the ‘benchmark’ or any other approach¹²⁷ to establishing a causal link short of a fully-fledged

¹²³ Judgment of 27 March 2012, *Post Danmark A/S v Konkurrencerådet*, C-209/10, ECLI:EU:C:2012:172.

¹²⁴ This test asks the counterfactual question: ‘assuming that other undertakings on the market were as efficient as the dominant undertaking, would they have managed to compete in the presence of the alleged anticompetitive behavior’.

¹²⁵ This is the so-called AKZO test that postulates that if an undertaking prices below its average total costs, but above its average variable costs, this practice is to be regarded as abusive only if it is part of a plan for eliminating a competitor. See Judgment of 3 July 1991, *Akzo Chemie BV v Commission of the European Communities*, C-62/86, ECLI:EU:C:1991:286.

¹²⁶ *Ibid.* para 39.

¹²⁷ The ‘as-efficient-competitor test’ is also put forward as an alternative causal test by Veljanovski (n 118).

counterfactual poses serious risks for over-simplification in the context of fast-changing markets, and even more so on digital markets.

III.2. Counterfactual causation in data-driven markets under Article 102

According to the Article 102 Guidance Paper, a counterfactual assessment of an impugned abusive behavior would entail a comparison of ‘the actual or likely future situation in the relevant market (with the dominant undertaking’s conduct in place) with an appropriate counterfactual, such as the simple absence of the conduct in question *or* with another realistic alternative scenario, having regard to established business practices.’¹²⁸ This definition is the first one containing the word ‘counterfactual’ in the context of Article 102 TFEU.¹²⁹ Although counterfactuals are not widely accepted as seen above, scholars have argued that applying counterfactual causation under Article 102 TFEU can – at least methodologically – align dominance case law with the type of counterfactual reasoning used under Article 101 TFEU for decades.¹³⁰ As observed above, using counterfactual analysis for anticompetitive assessment can also better align remedies with impugned conduct through a shared focus on tackling anticompetitive *effects*.

Geradin argues that there are multiple ways in which counterfactuals could be constructed, but the common feature of Article 102 TFEU counterfactuals is that they are invariably based on the reconstitution of the past.¹³¹ However, there are multiple ways/counterfactuals through which one can reimagine the past, and all of them merit attention on dynamically changing data-driven markets. Hence this paper’s call for a multiple counterfactual causation analysis, whereby one can use econometric simulations to compare the current state of affairs with i) a world without the infringement in question or ii) with an ‘alternative realistic scenario’. Such a Guidance-paper inspired approach, entailing the creation of multiple counterfactuals is a practice not unheard of in jurisdictions beyond the EU.¹³²

One way in which the ‘realistic alternative scenario’ counterfactuals can be constructed is by varying the parameters of anti-competitive foreclosure as identified under paragraph 20 of the Article 102

¹²⁸ See Guidance Paper (n 43) para 21.

¹²⁹ D Geradin and I Girgenson (n 66).

¹³⁰ P Colomo, ‘Measuring Competitive Harm against the Relevant Counterfactual’ Slides presented at the Oxford Antitrust Symposium (24-25 June 2017).

¹³¹ D Geradin and I Girgenson (n 66).

¹³² Veljanovski explains that multiple counterfactual analysis is definitely not something exotic and has been used under UK merger control. See Veljanovski (n 118).

Guidance Paper. Most of these parameters echo Porter's 'five forces analysis'¹³³ (conditions of entry and expansion; position of customers and suppliers; position of competitors) and can be varied, *ceteris paribus*. For example, if there are indications that market exit could happen (e.g. due to a failing firm), one can create an 'alternative scenario' counterfactual with that exit factored in. If it is shown that competition in the alternative scenario will deteriorate further, then the current scenario is to be preferred.¹³⁴ This practice is called 'scoping the counterfactual' by Marsden and Colley,¹³⁵ and has been extensively used in competition decisions by common law courts.¹³⁶

By the same token, if there are indications that regulation prevents competitive entry or the defendant puts forward such a theory as a defense, a counterfactual without regulation (or one that varies some regulatory obligations) can be created. Given that our focus in this paper is on data-driven markets and ex-ante data sharing mandates in particular, these specific regulatory obligations can be varied as they constitute 'conditions of entry and expansion' in the framework of the Article 102 Guidance Paper. Hence, several 'alternative scenarios' can be counterfactually constructed – with i) no mandates, ii) less or iii) more intrusive ex-ante data-sharing mandates. Such an exercise will enable the assessor to isolate the influence of data-sharing mandates on the impugned conduct, thus giving information about the relationship between mandated data sharing and anti-competitive effects. This information can then be fed into the remedial stage that, as will be seen in Section III.3 below, can show the need for additional *ex-post* data-sharing mandates or none at all. Of course, multiple other counterfactuals can be constructed, including the classical 'without infringement' counterfactual. However, the above-described 'alternative scenarios' counterfactual can be utilized if the classical analysis produces ambiguous results or if the defendant puts forward a credible different story.

Once generated, the outcomes of all plausible counterfactuals can be assessed on the basis of the reasonableness standard. The so-called 'reasonableness' theory in tort and criminal law is applied in cases of several events, each of which might have caused a single particular outcome (i.e. an anti-competitive effect).¹³⁷ In order to decide whether a causal connection can be established, the criterion of 'reasonable attribution' of a cause to an effect is used. This approach evidently introduces a

¹³³ M Porter, 'Competition and Antitrust: toward a Productivity-based Approach to Evaluating Mergers and Joint Ventures' [2001] The Antitrust Bulletin.

¹³⁴ This is the analysis usually done under merger control; contrary to Article 102 TFEU analysis, the counterfactual assessment in merger control is prospective.

¹³⁵ L Colley and P Marsden, 'Use of the Counterfactual in Antitrust' (Competition Law Forum Discussion Draft).

¹³⁶ See, for instance, the National Grid decision of the Civil Division of the UK's Court of Appeal (*National Grid plc v Gas and Electricity Markets Authority* [2010] EWCA Civ 114). There, a counterfactual was considered where the defendant National Grid would have used a different, less intrusive type of contract for its business customers. It was concluded that such type of contract would have been less restrictive of competition. Hence, the effects of National Grid's real contracts were seen to be anti-competitive.

¹³⁷ M Carrier, 'A Tort-based Causation Framework for Antitrust Analysis' (2011) 77 Antitrust Law Journal.

subjective judgment regarding what is ‘reasonable’ and therefore inserts a nuance that helps courts decide so-called ‘hard cases’. Given the complexity of digital markets described above, it is almost certain that competition cases involving data-driven dominance will be ‘hard cases’ whereby multiple possible causal counterfactual scenarios explaining the observed anti-competitive outcome could be envisioned.

This test – composed of multiple counterfactuals and a reasonableness criterion for their outcomes’ causal attribution to a given effect – gives more room for maneuver both to the enforcer and to the undertakings involved in an antitrust dispute, as it introduces more and more rigorous steps in the establishment of causation. It also introduces a normatively inspired criterion of reasonableness for causal attribution. As observed by some commentators,¹³⁸ this subjective criterion can cushion the effect of overzealously applied counterfactuals and can result in giving the ‘benefit of the doubt’ to some defendants. Hence, this approach would also contribute to a more equitable weighing of the interests of the parties to an antitrust dispute – a development much needed in fast-moving, dynamic digital markets.

III.3. The counterfactual link and (data-driven) remedies

As argued by Lianos, the required link between effects and remedies is one of logical coherence, which can be established by means of a proportionality test.¹³⁹ In practice, this would entail that the counterfactual outcome that prevailed at the foreclosure assessment stage will then need to be linked to necessary, suitable and fit-for-purpose (i.e. proportionate)¹⁴⁰ remedies. As Turner maintains ‘Although theories of harm and evidence in the finding of infringements have become increasingly economics and effects-based, this may be less so in relation to remedies. Where the wrong is founded on the basis of economic analysis, it would seem logical to apply economic analysis to the righting of that wrong.’¹⁴¹ While we are very much in agreement with this statement, it has to be hereby emphasized that, contrary to some views,¹⁴² we are of the opinion that remedies need not be subject to a separate counterfactual assessment at the stage of their determination. Instead, we side with Lianos that the proportionality principle should be the decisive criterion should several possible remedies be put forward that can remedy the anti-competitive effects established under a

¹³⁸ Ibid.

¹³⁹ I Lianos (n 6).

¹⁴⁰ V Turner (n 45).

¹⁴¹ C Ritter (n 4).

¹⁴² V Kathuria and J Globocnik (n 5).

counterfactual economic approach at the stage of anticompetitive foreclosure assessment (Section III.2).

For instance, should a counterfactual as performed in Section III.2 above show that ex-ante data-sharing mandates impede competition, for example by diminishing incentives for smaller firms to engage in innovation that helps them collect their own proprietary data, ex-post remedies will dictate no imposition of additional data-sharing obligations on the dominant firm and even possibly a temporary preclusion of the firm in question from compliance with its ex-ante data-sharing obligations under the DMA. Although no such remedial reversal is currently procedurally available under the legislative framework, it might become necessary in order to respond to the dynamically changing circumstances of data-driven markets. Specifically, this proposed ‘rolling back’ of an ex-ante remedy cannot be immediately performed by the competition authority acting in its capacity of an ex-post regulator, as this will mean the latter enters the jurisdictional domain of the ex-ante regulator.¹⁴³ An appropriate mechanism that can allow for such ‘rolling back’ would be a recommendation to that effect issued by the competition authority to the ex-ante regulator, with the latter having the latitude to decide whether or not to follow the suggested ‘rolling back’ of ex-ante data sharing mandates.

Another option would be that counterfactual assessment at the foreclosure stage points to the need for even more stringent data-sharing mandates than the ones imposed ex-ante under the DMA. At that point, from all possible proposed mandates, the one that best fits the proportionality requirement should be chosen. Whatever the concrete case may be, a more general point merits our attention at this juncture: namely that literature suggests that data-sharing mandates might work better as an ex-post remedy than an ex-ante one. As Gal and Petit argue: ‘the role of data as a barrier to entry depends on the attributes and context of each market.’¹⁴⁴ Thus, given that ex-ante regulation in the DMA is not market-assessment based whereas ex-post competition enforcement is, the latter is the only regime ultimately able to adequately accommodate data-related concerns at the stage of remedies. As such, our ultimate conclusion regarding data-sharing mandates as remedies is that, should they be imposed at all, this should happen in the framework of ex-post enforcement.

¹⁴³ For a similar point, see Lianos (n 6) 435.

¹⁴⁴ N Petit and M Gal (n 29).

IV. Concluding remarks

In the face of the recently proposed Digital Markets Act, which imposes a number of ex-ante obligations, including limited data-sharing mandates on digital ‘gatekeeper’ platforms, this paper emphasized the importance of enforcement coordination between ex-ante regulatory tools and ex-post competition policy. Underlying the paper’s focus is the recognition that thought from ex-ante enforcement is likely to influence ex-post enforcement given that both can address the issue of data-driven market tipping – a key concern for the DMA and a subject of increased recent scrutiny under competition policy. The extent to which one enforcement domain can impact the other can, for instance, be seen in competition policy’s neighbor domain of telecommunications, where, as illustrated by the *Slovak Telekom* case,¹⁴⁵ interaction led to an ‘abridged’ test for abuse of dominance under Article 102 TFEU.

We argued that such intellectual cross-fertilization between the two domains needs to be approached with care. Digital markets are subject to fast-evolving competitive dynamics, which can make the ideas enshrined in ex-ante requirements superfluous or ineffective by the time a gatekeeper platform is under ex-post scrutiny for novel types of harm. For example, as we described in detail in section II.2, emerging policy and business initiatives as well as new technologies and techniques for creating and analyzing data are bound to make data-sharing mandates ever less effective at restoring competition in digital markets. We therefore made the case for measured intervention based on the recognition that dissonance between the ex-ante DMA and ex-post competition enforcement might stifle dynamic digital markets.

Specifically, we argued that authorities need to proceed carefully with regard to two aspects of ex-post interventions in dynamic digital markets already governed by ex-ante obligations. First, authorities need to make sure that there is a high threshold for such interventions, which requires that rigorous analysis is applied to determine that companies abused their dominant position. Second, authorities need to carefully choose appropriate remedial actions if abuse of dominance is found.

With regard to establishing that a company has abused its dominant position, we proposed a multiple counterfactual causation test. We maintained that such a test should be based on careful examination of anticompetitive foreclosure, taking into account all of the factors mentioned in para. 20 of the European Commission’s Guidance Paper, with specific emphasis on ‘conditions on the relevant market’

¹⁴⁵ Judgment of 13 December 2018, *Slovak Telekom*, T-827/14, EU:T:2018:930.

(point 2 of the Guidance Paper 2009). In that context, the fact that there is a (limited) ex-ante data sharing mandate under the DMA would need to be factored into the equation when establishing foreclosure. Finally, with regard to selecting appropriate remedial actions in cases in which abuse of dominance has been established, we posited that it is crucial for authorities to determine the actual *effects* of the infringement at the foreclosure stage – an exercise to which counterfactual analysis is singularly suited – in order to come up with working remedies through proportionality analysis at the next stage of the assessment of an impugned practice. Doing so ensures that authorities choose remedies that are effective at actually reversing the anticompetitive harm caused by the dominant company’s abusive behavior.

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