Digital Competition Expert Panel

Public responses to call for evidence from individuals

Contents

Written Evidence to Digital Competition Expert Panel

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Question 1: What are the emerging benefits and harms from digital markets, such as social media, e-commerce, search engines, and online advertising, of the tendency toward having only one or a small number of big firms?

Benefits

There are many notable benefits associated with digital markets especially for online sales and the delivery of a greater choice of products to remote areas where there is less competition due to a limited access to supply. Other benefits include the emergence of electronic payments via online banking and mobile devices. Indeed, a variety of retailers and businesses have greatly improved their online presence, offering a far better choice to consumers. Overall, one can say that we are experiencing a digital renaissance.[1]

Harms

There is a tendency toward higher levels of concentration in digital markets, such as social media (Facebook); universal search and advertising (Google), micro-blogging (Twitter), PC software (Microsoft), mobile devices and ecosystems (Apple), cloud computing (Amazon followed by Microsoft and Google), mobile operating systems (Google's Android), data analytics (Google's Hadoop, Facebook's Acxiom provider of targeted advertising, or Datalogix for data extracted from loyalty cards), voice and video calls (Microsoft's Skype), and large-scale online distribution (Amazon). The evolution of these platforms has been portrayed as a new form of 'imperialism'.[2] The obvious harm to consumers is that they have less privacy, more targeted

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[1] On digital transformation and the impact of digitalisation on music, movies, TV, books, photography, the 'digital farm system', i.e., Spotify's access to 30 million songs, Netflix's access to 3,400 movies and over 750 TV shows and series, Amazon's Kindle access to 700,000 book titles and so on, see Joel Waldfogel, *Digital Renaissance: What Data and Economics Tell Us about the Future of Popular Culture* (Princeton University Press, Princeton, 2018), 253.

[2] The present concentration level seems to have been predicted by Bellamy's novel 'Looking Back' (1888), forecasting a world dominated by one industrial trust; see Diane Coyle, 'Platform Dominance: The Shortcomings of Antitrust Policy' in Martin Moore and Damian Tambini (eds.) *Digital Dominance: The Power of Google, Amazon, Facebook and Apple* (Oxford, Oxford University Press, 2018), 57; similar to the dominance of Google's search engine, Facebook's social network, and Twitter's platform, see Patrick Barwise and Leo Watkins, 'The Evolution of Digital Dominance: How and Why We Got to GAFA' in Moore (2018), 42; James C Cooper and Joshua Wright, 'The Missing Role of Economics in FTC Privacy Policy' in Evan Selinger, Jules Polonetsky, and Omer Tene (eds.) *The Cambridge Handbook of Consumer Privacy* (Cambridge University Press, Cambridge, 2018), 481, who rely on estimates suggesting that 1.3 billion users log on to Facebook daily and 150 million on Snapchat, whilst the percentage of consumers using health tracking devices has doubled, and nearly half of US households have an Amazon Prime account; on

advertising, and participation in a social experiment[3] that involves the large-scale accumulation of personal and/or sensitive data for marketing research and strategic pricing. Other problems are more difficult to quantify in economic terms; for example, subjective harms, such as fear of being surveilled, compared to more objective harms, such as the damage caused by identity theft, the time wasted with junk emails, or the higher prices paid due to online price discrimination or weaker bargaining power.[4]

Key drivers of the trend towards only one or a small number of firms

Among the key drivers of the above trend are the first market entry advantage coupled with pioneering innovation, an intelligent low-cost product pricing or free-of-charge business model,[5] open source[6] functionality, and/or under-cutting the prices of rivals. According to the theory of disruptive innovation, there is, however, a high degree of volatility of the market shares of such digital innovators. Classic examples of low- and high-end disruptive business models include Ryanair and Apple respectively, where the latter serviced consumers who were previously dissatisfied with the offerings of the incumbent firms.[7] Other examples of low pricing models include mobile devices and communication services where similar business models offer new entrepreneurial opportunities for further disruption. Furthermore, open source is yet another generative source of disruptive innovation affecting cloud computing and software applications. The latest example of a generative technology that is easily accessible is Google's Android operating system due to its potential to leverage Google's search engine dominance on PCs to mobile devices, such as browsers, search engines, Play Store,[8] maps, videos (YouTube), and GPS (Waze). Formerly, Apple offered customers an App store that was initially available free-of-charge and later for a small fee. However, Google undercut the latter by offering its operating system as open source software. A final example of congruent innovation[9] is Microsoft's Skype for instant messaging, including voice recognition and Facebook, and Google+'s face recognition from a biometric database using neural network models to recognise individuals based on a large set of images, and microphone-enabled devices, such as Apple's Siri

platform imperialism, see Dal Yong Jin, *Digital Platforms, Imperialism and Political Culture* (Routledge, Taylor & Francis, New York, 2015), 38; on the American domination of platforms, see the tables on p. 54-58.

[3] See generally Michelle N Meyer, 'Ethical Considerations When Companies Study – and Fail to Study – Their Customers' in Selinger (2018), 211; Thomas L Carson, 'Deception and Information Disclosure in Business and Professional Ethics' in George G Brenkert and Tom L Beauchamp (eds.) *The Oxford Handbook of Business Ethics* (Oxford University Press, Oxford, 2010), 335; Richard A Spinello, 'Information Privacy' in Brenkert (2010), 366.

[4] See Alessandro Acquisti, 'The Economics and Behavioural Economics of Privacy' in Julia Lane, Victoria Stodden, Stefan Bender and Helen Nissenbaum (eds.) *Privacy, Big Data, and the Public Good: Frameworks for Engagement* (Cambridge University Press, Cambridge, 2014), 83 and 87. More sceptical about monetary damages in the context of Google's tracking of Apple's Safari browser, see Chris Jay Hoofnagle, 'The Federal Trade Commission's Inner Privacy Struggle' in Selinger (2018), 177; for the risk of identity theft arising out of the social security numbers' loss, see Laura Brandimarte and Alessandro Acquisti, 'The Economics of Privacy' in Martin Peitz and Joel Waldfogel (eds.) *The Oxford Handbook of the Digital Economy* (2012), 558.

[5] See Ian Chaston, *Internet Marketing and Big Data Exploitation* (Palgrave Macmillan, 2015), 52.

[6] This is in contrast to closed platforms such as Microsoft Windows, Intel processors, Sony's PlayStation game console, and, initially, Apple's iPod and iPhone, see Chaston (2015), 109.

[7] See Chaston (2015), 3.

[8] Other alternatives are Apple's App Store, Windows' Phone Store, BlackBerry' App World to name a few.

[9] See Chaston (2015), 103.

in iPhones, Amazon's Alexa in Echo, or Samsung's smart TVs.[10] The latter could have been leveraged to Microsoft's professional network, Linked-In.

The degree to which large market players enable or inhibit wider innovation and investment

The above context proves that despite a rival having a large share of the market, it is still possible to overtake their business by sustained investment in research and development (R&D) projects, by supporting innovation, and by exploiting the advantages of a new technology. Innovative businesses are therefore vulnerable to new market entries, and their market position can be challenged.[11] So far, the market has been driven by innovators and early adopters of innovative technologies, as consumers have largely purchased mobile devices with a panoply of software applications included in a bundle. It remains to be seen whether incumbent newcomers could attract the late majority of consumers who are not yet persuaded that such mobile devices are functionally workable and worth the investment. At least in theory, there is some potential to challenge the present dominance of early innovators. According to the 'chasm' theory of innovation,[12] laggards are the ultimate consumers to be persuaded if such devices are sensitively priced. In any event, to attract consumers, any new incumbents would have to sustain major investments in R&D[13] and undercut the existing pricing alternatives. To date, there are not many such scenarios. For example, UK's Arm Holdings[14] is one particular case where the former overtook Intel by covering a distinct consumer demand for new chips for mobile devices.

Harms associated with concentration in digital markets

An obvious harm to consumers is that they have to cover for any failed R&D costs where the new technologies prove workable only for a short period of time due to inherent failures in the hard- or software and to the race for more innovation, e.g., a new version of the operating system to which the mobile hardware cannot be upgraded and, as a result, consumers are no longer satisfied with a slow device. A major harm is that new technologies, such as PCs, mobile devices, and so on, do not cover for the costs related to the short life span of such products and the emergent environmental waste. These manufacturers do not assume any responsibility for recycling, passing the responsibility for and cost of recycling on to the consumers, which is unacceptable. Businesses make larger profits, so they should assume responsibility for their fair

[10] Some argue that Google has been analysing G-mails since 2007 and that many Android phones have been able to see and hear people since 2008; see Robert Epstein, 'Manipulating Minds: The Power of Search Engines to Influence Votes and Opinions' in Moore (2018), 310; Mark MacCarthy, 'In Defence of Big Data Analytics' in Selinger (2018), 50; Yana Welinder and Aeryn Palmer, 'Face Recognition, Real-Time Identification, and Beyond' in Selinger (2018), 103; Alvaro M Bedoya, 'Algorithmic Discrimination vs. Privacy Law' in Selinger (2018), 233; Woodrow Hartzog, *Privacy's Blueprint: The Battle to Control the Design of New Technologies* (Harvard University Press, Massachusetts, 2018), 248, where voice recognition may capture personal and/or sensitive data, which are transmitted to third parties through sensor-enabled devices.

[11] See Chaston (2015), 49 and 50, who offers the example of the video game console industry where Sega, Nintendo, Sony, and Microsoft had been leading the market for a while only to be overtaken by McPhee and Nuttall.

[12] See Chaston (2015), 73.

[13] See Clayton M Christensen, *The Innovator's Dilemma* (Boston, Massachusetts, Harvard Business School Press, 1997).

[14] See Chaston (2015), 100.

share of environmental protection given that it is their inefficiency in the first instance, due to failed innovation coupled with dynamic competition for better innovation, which contributes directly to such environmental waste.

Question 2: What are the emerging benefits and harms of the same number of digital firms having a presence across a broad range of digital markets?

Benefits

Consumers are often the beneficiaries of a smart bundling of more than one product together for the purpose of a functional installation and the smooth running of the overall technology, including hard-and software functionalities on both PCs and mobile devices. On the contrary, on PCs and tablets, consumers have to purchase expensive licensing fees for Microsoft's software, including Word, Excel, PowerPoint, and so on, whilst having Mac or Linux as alternatives.

Harms

A. The extent to which the same number of digital firms have a presence across a broad range of digital markets

This could imply an actual and real potential to leverage dominant market power from one market to other adjacent markets, for example, Microsoft's leveraging of its market dominance in the Windows operating system to other markets, i.e., its Explorer browser or Media Player; Google's leveraging of its dominant position in the markets for a universal search engine on PCs and for the Android operating system on mobile devices to compare shopping advertising and for its Play Store, browser, search engine, maps, and videos respectively; Facebook's leveraging of its dominant position in the market for social media advertising to instant communications, including texts, calls, and video messages (WhatsApp), and photo-and video sharing (Instagram) markets; and Amazon's dominant position in the market for online distribution to cloud computing, logistics, and so on.

B. The key drivers of this cross-market presence

The consolidation of a dominant market position is not an inherent feature of the multi-sided business model of such digital platforms, where one platform service is devised to attract users and is therefore entirely free of charge,[15] whilst the other is designed to extract revenues from the sharing of personal or sensitive data to third parties, including advertisers and data analytics. It is often the result of mergers and acquisitions of many innovative start-up businesses. As a result of such market consolidation, there is less competition and less choice available in the respective market segments. While the start-ups acquired following a merger become an integral part of a larger corporation, it cannot be assumed that the dominant platform will continue to prioritise the R&D projects that defined the former. A few examples are offered by the decline of quality evidenced by Microsoft's Explorer or Linked-In services,

[15] Such offers are on a 'take-it-or-leave-it basis' in exchange for data, see Acquisti (2014), 87, but that data can be sold, not only shared, see Jennifer Barrett, 'Data Brokers: Should They Be Reviled or Revered?' in Selinger (2018), 36; on multi-sided software platforms such as Apple's iPod, iPad and iPhone versus Google's Android, see Andrei Hagiu, 'Software Platforms' in Peitz (2012), 65; on two-sided markets, see Alex Gaudeul and Bruno Jullien, 'E-commerce, two-sided markets and info-mediation' in Eric Brousseau and Nicolas Curien, *Internet and Digital Economics: Principles, Methods and Applications* (Cambridge University Press, Cambridge, 2007), 269.

Google's Scholar citations finding service, or its subsequent versions of Android on mobile devices.

One expectation of this cross-market presence has been that the data leveraged from one side of the service platform to the other is 'non-rivalrous' and that it should be made accessible to other competitors. For example, the European Commission's Communication on 'Building a European data economy'[16] aims to improve access to anonymous machine-generated data through the sharing of data from larger to small- and medium-sized businesses (SMEs) in order to protect investments and assets and to minimise the lock-in effect on SMEs. In this context, notable examples include the data captured by sensors in modern farms or traffic lights to improve harvesting or traffic management. Other sectors include transportation, energy markets, smart living, and healthcare. The above expectation, however, remains unrealistic, as the new General Data Protection Regulation 679/2016 demands that the data be used solely for the specific purpose for which it had been collected so as to pursue the principle of data minimisation.[17] It appears fallacious to rely on the premise that access to data has to be the norm where businesses granted such access would, for example, use artificial intelligence software to engage in anti-competitive algorithmic coordination.[18] In other words, the exclusionary market-foreclosure-effect test used by competition authorities needs adaptation to the new regulatory regime applicable to competition rules under the prohibition of abuse of a dominant position and merger control.

It is also useful to recall that the above regulation sets out a lower threshold of corporate compliance than most competition law scholars expect. Most companies and/or corporations are easily able to tick the data protection check-list provided that the users of online platforms have agreed to the privacy terms or conditions, in particular, the sharing of their economic data to third parties, i.e., data brokers, advertisers, retailers, and so on; and the data harvested from that platform is anonymised. The two pressing problems can be summarised as follows: (i) such users do not have any choice but to agree to those unfair terms and conditions imposed by a dominant platform or else leave the platform; and (ii) where category price discrimination happens, the economic harm to consumers is invisible to most consumers, and even for competition authorities, it may be difficult to detect or quantify the harm caused. In addition, the traditional focus on the exclusion of those rivals that cannot access the same data is

[16] See the Commission's Communication to the European Parliament, the Council, the European Social and Economic Committee and the Committee of the Regions, COM (2017) 9 final, ‹https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52017DC0009&from=EN›; sharing such data with smaller competitors raises the issue of the IP protection of the data, see Wolfgang Kerber, 'Rights on Data: The EU Communication 'Building a European Data Economy' from an Economic Perspective' in Sebastian Lohsse/Reiner Schulze/Dirk Staudenmayer (eds.) *Trading Data in the Digital Economy: Legal Concepts and Tools* Münster Colloquia on EU Law and the Digital Economy III (Nomos, Hart Publishing, 2017), 116; sceptical about the Commission's Communication due to the tension between data protection and data economy, since of interest to the latter will be solely personal data, see Christiane Wendehorst, 'Of Elephants in the Room and Paper Tigers: How to Reconcile Data Protection and the Data Economy' in Lohsse (2017), 328; 331. For example, anonymised data may become personal due to a subsequent combination of datasets.

[17] The latter calls for businesses to limit their collection of data, see Mark MacCarthy, 'In Defence of Big Data Analytics' in Selinger (2018), 56; for the opinion that the risk of unlawfulness of big data processing is higher, see Irene Kamara and Paul De Hert, 'Balancing and the Controller's Legitimate Interest' in Selinger (2018), 347.

[18] See Josef Drexl, 'On the Future EU Legal Framework for the Digital Economy: A Competition-based Response to the 'Ownership and Access' Debate' in Lohsse (2017), 240-242.

misleading, as the digital context requires a reversal of focus on the exploitation of consumers. Thus, the latter, too, fails to always and reliably quantify harm other than by showing a detectable price change prior to data collection as opposed to the situation where the economic data about consumers becomes available to third parties. For consumers, it is difficult to even try to identify the corporate circle of third parties that capture their data. These consumers are captive due to such information asymmetries about their own data.

Question 3: What effect can the accumulation and concentration of data within a small number of big firms be expected to have on competition?

Depending on the type and size of the digital platform, the accumulation of large-scale data raises significant concerns for the economics of privacy, i.e., targeted advertising,[19] and for the strategic exploitation of consumers, i.e., through product pricing.

Briefing on the Internet's Architecture on Digital Platforms

Digital platform	Transactions	Internet service	Business model	Data
E-commerce: brick-and-mortar businesses with an online presence, retailers, banks, furniture stores, hotels, airlines, insurance, credit, mortgages and so on.[20]	Online payments: debit or credit card companies	Primary	For profit	Financial payments data securely stored and used for predictive analytics. Many online businesses offer loyalty cards to their customers.
Social/professional media/search engines and so on	Online activities	Secondary	Free of charge, but subsidised[21] by targeted advertising and the sharing of data to third parties.	Personal and/or sensitive data used for large-scale big data analytics.
Software operating systems	Functionality	Delivery systems	Open source or licensing fees	Data may be used for analytics, too.
Hardware	Functionality	Access devices (PCs, tablets, mobiles)	For profit	Unknown if chips include monitoring devices, such as face or voice recognition.[22]

All of the above business platforms collect financial data securely, as it is necessary for the processing of online payments. Large retailers, such as supermarkets (Tesco, Sainsbury's, Marks & Spencer etc.), and many others, such as Wayfair for furniture and household products, B&Q

[19] See the Commission's Justice and Consumers' study, which identified that in the EU28, more than two thirds (71%) of the respondents have experienced targeted advertising.
[20] Chaston (2015), 25.
[21] For the conclusion that in two-sided platforms, prices involve some form of cross-subsidy, see Bruno Jullien, 'Two-Sided B to B Platforms' in Peitz (2012), 180.
[22] For example, Nike is known to have included a GPS sensor feature in its footwear.

for gardening, airlines, hotels, and so on, which are also dominating local, regional, or neighbouring markets, offer loyalty cards[23] that enable them to offer personalised offers to customers, such as discounts or promotional campaigns, and to exploit their well-known preferences. Regulatory efforts to prevent retailers from asking for their customers' home address when using their credit cards have been fully exploited by data brokers.[24] The latter derived the same personal data by asking for the telephone number. When they were prohibited from asking for the phone number, data brokers collected the postal code used to identify the home address.

Building upon my previous research on 'The Rise of Big Data', I can highlight the existence of a two-tier system of micro- and large-scale (big) data analytics.[25] All companies that dominate local or neighbouring markets collect data at a micro-scale level for the purpose of predictive analytics, such as linear, including decision trees, vector, and cluster modelling.[26] They use geo-demographic variables, such as income, age, and so on, and behavioural data to predict the target's willingness to buy a particular product. Major retailers attempt to test their customers' willingness to make certain purchases. Regularly, credit-rating companies use sample modelling to test the probability of fraud; insurance companies for the probability of claims; life insurance companies to estimate life expectancy; banks for the probability of a mortgage's voluntary foreclosure;[27] and so on. However, given the limited size of the sample, such predictive analytics may not prove accurate. In contrast, large-scale corporations that possess or harvest a large amount of big data may inter alia use raw data from the unstructured content of emails or the web for data mining purposes; machine-generated data, such as logs or mobile applications;[28] statistical software packages, such as IBM, Stata, Rapid Minder, Google's open source software, Apache Hadoop,[29] Revolution, and so on; and automated data that is a mix of data-driven and

[23] Datalogix tracks the on- and off-line purchasing patterns of consumers from the use of their loyalty cards; based credit card usage, loyalty cards and sales data, the Electronic Data Interchange uses automated data analysis to identify trends and customers' different needs, see Chaston (2015), 45.
[24] See Hartzog (2018), 74.
[25] See Anca D Chirita, 'The Rise of Big Data and the Loss of Privacy' in Mor Bakhoum et al. (eds.) *Personal Data in Competition, Consumer Protection and Intellectual Property Law*, MPI Studies on Intellectual Property and Competition Law (Springer, Berlin-Heidelberg, 2018), 153 ff. and 173 on the collection of data, which is well-supported by the recent findings of the Commission's Justice and Consumers: 'Consumer market study on online market segmentation through personalised pricing/offers in the European Union' (June 2018) ‹https://ec.europa.eu/info/publications/consumer-market-study-online-market-segmentation-through-personalised-pricing-offers-european-union_en›, including evidence from stakeholder surveys proving the collection of personal socio-demographic data, behavioural data, technical, and sensitive data.
[26] See the Commission's Justice and Consumers' study, cited above, which identified that online traders use specialised companies' personalisation or data sharing; on clustering as a popular data mining technique, see Steven Finlay, *Predictive Analytics, Data Mining, and Big Data: Myths, Misconceptions and Methods* (Palgrave Macmillan, 2014), 120, who argued that predictive analytics does not require 'big data', but a few hundred examples of the behaviour expected to be predicted, 143; clustering algorithms may be used to establish micro-segments by identifying individuals who display similar mobility patterns, see Arvind Sathi, *Engaging Customers Using Big Data: How Marketing Analytics Are Transforming Business* (Palgrave Macmillan, 2014), 56.
[27] See Finlay (2014), 53.
[28] Finlay (2014), 15; Barwise and Watkins (2018), 28.
[29] Named after the elephant toy of its founder's son, Hadoop is a tool used to store massive amounts of data, within the range of peta- or terabytes, for quick processing, see Finlay (2014), 200 and 206; Carl Landwehr, 'Engineered Controls for Dealing with Big Data' in Julie Lane et al. (eds.) (2014), 229, as well as the risks associated with cloud computing especially for universities and other research institutions.

expert-derived rules to analyse big data.[30] Software packages act as intelligent agents that allow for quick automation[31] and processing of big data analytics.

With the help of the quantitative and statistical analysis of big data, it is, however, possible to accurately measure the consumers' willingness to pay for particular products,[32] determine the elasticity of demand in response to price changes,[33] observe trends in the life cycle of a product, identify under-performing products, and categorise customers. While the micro-scale behavioural modelling of data serves for the analysis and prediction of the risks associated with the use of targeted advertising and promotional campaigns, when the same modelling is being applied at a large-scale level to forecast customers' demand, to predict product trends, and to make strategic pricing recommendations, the latter inevitably becomes part of a wider social experiment of intensive platform monitoring and data sharing with data analytics companies. Due to the size of the sample of participants due to be observed, the latter forecasts tend to be even more accurate and to reliably inform producers of estimated demand and future pricing options. I would argue that no marketing research harms consumers as long as the sample of the targeted consumers remains meaningful, but limited for a specific purpose. Otherwise, big data analytics is a perfect substitute for direct or indirect exchanges of strategic information regarding actual or future pricing methods; estimated demand; consumers' preferences, location, investment; and so much more.

However, larger companies or corporations are in a stronger position to extract strategic data that can later be exploited tactically, i.e., through targeted advertising, and strategically, by informing the price setting mechanism. Instead of a business-to-business exchange of information (B2B: 'hub and spoke' conspiracy), this large-scale marketing experiment moves on to the prospective consumers (B2C: track-and-monitor conspiracy). In my opinion, this phenomenon, which I have previously identified as a track-and-monitor conspiracy on the basis of consumers' geographical location; socio-economic demographics, i.e., income status; and behavioural data, i.e., preferences and interests, allows for a pricing conspiracy to be implemented with the help of consumers rather than competitors. For example, consumers identified as living in remote areas, i.e., the Highlands or small islands, usually have less choice and can therefore be charged more for other terms and conditions, such as transportation costs. Knowing consumers' category of income, businesses can more accurately predict their reservation price in terms of bargaining. It is similar to a meeting of minds between the buyer and the seller, where the latter knows how much the former is able to potentially spend. Finally, younger consumers who use mobile devices that are less secure for e-payments may be more likely to be targeted by scammers, but this issue could be left to other fields of law, such as information technology law and/or cyber/internet laws on fraud and computer related crimes.[34]

[30] Finlay (2014), 63.
[31] Chaston (2015), 211.
[32] Finlay (2014), 27.
[33] Chaston (2015), 129.
[34] Generally Ian J Lloyd, *Information Technology Law* (Oxford University Press, Oxford, 8th ed., 2017), 237; Chaston (2015), who argues that older people use mobile phones to a lesser extent than younger people, 162; thus, government regulations on mobile surveillance have been too slow to catch up with the speed of the new technology, see Kirsten Martin and Katie Shilton, 'How Privacy Is Respected in Mobile Devices' in Selinger (2018), 91.

As has more recently been shown, the effect of 'personalised' pricing is perhaps less harmful than some scholars or policymakers have thought; thus it raises concerns about fairness and discrimination.[35] It is, however, not to be under-estimated when it comes to smaller online traders that have no business reputation to lose, and the impact of small, but significant price increases on individual consumers are still likely to be felt. Several examples include online furniture stores, airlines, or hotels whose pricing may be subject to change depending on the tracked location of a particular and/or returning customer. Based on personal experience with such traders, Furniture Village,[36] Victorian Fireplaces, Air France/KLM, and several lesser known furniture stores have successfully engaged in personalised pricing. In contrast, smaller but reputable family-owned businesses displaying high-to low-end pricing methods, such as Brights of Nettlebed, Anderson Bradshaw, Lock, Stock & Barrel, Oak Furniture Land, and Furniture Choice, and seeking to attract new customers, have not engaged in personalised pricing.[37] Hotel providers are notorious for a pre-fixed, i.e., advance booking model, which is cheaper without cancellation, and more dynamic, i.e., excessive pricing, close to a booking's proximity. Airline companies adopt pricing models similar to those applicable to unfilled hotel rooms whereby unsold plane seats are considered to be 'perishable'.[38]

However, the anti-competitive effects of the large-scale accumulation of customers' data for the purpose of price discrimination and classification of customers subject to different groups or categories, rather than personalised discrimination, based on their location, socio-economic status, and individual preferences and interests, can no longer be ignored as a B2C track and monitor conspiracy on customers' expectations of prices, demand, and future preferences. Overall, there is evidence of consensus in the academic literature to suggest that in digital

[35] See Lina M Khan, 'Amazon – An Infrastructure Service and Its Challenge to Current Antitrust Law' in Moore (2018), 110, footnote 9 relying on journalists; Christopher Townley, Eric Morrison, and Karen Yeung, 'Big Data and Personalised Price Discrimination in EU Competition Law', KCL Law School Research Paper 38/2017; thus, personalised pricing could fall under the consumer-protection function of competition law; cf. Orla Lynskey, 'The Power of Providence: The Role of Platforms in Leveraging the Legibility of Users to Accentuate Inequality' in Moore (2018), 182, who rightfully argues that advertisers have 'little interest in the actual identity of an individual'; MacCarthy, (2018), 61, recalling the efforts made by policy-makers, i.e. the Obama's administration report on big data and its discriminatory use in credit, employment, education, and criminal justice, see the Executive Office of the President, 'Big Data: A Report on Algorithmic Systems, Opportunity, and Civil Rights' (May 2016), ‹https://obamawhitehouse.archives.gov/sites/default/files/microsites/ostp/2016_0504_data_discrimination.pdf›.

[36] Furniture Village added 6% on top of the initial online price to returning customers based on location tracking. The remedy was using a different PC.

[37] As has been highlighted elsewhere, there is 'no real' evidence of widespread personalised price discrimination, see Diane Coyle, 'Platform Dominance: The Shortcomings of Antitrust Policy' in Moore (2018), 58; on the lack of empirical evidence about the harms caused by privacy, see James C Cooper and Joshua Wright, 'The Missing Role of Economics in FTC Privacy Policy' in Selinger (2018), 481; Lynskey, cited above, 183 for the reluctance to use personalized prices for fear of 'consumer backlash'; Chaston (2015), 195, arguing that well-known online suppliers are more trusted than new or smaller companies. More recently, the Commission's Justice and Consumers' market study, cited above, found that three fifths of around 160 e-commerce websites, i.e., 61%, have engaged in personalised pricing.

[38] See the Commission's Justice and Consumers' market study which has identified airline and booking websites as evidencing a higher level of personalised pricing; Chaston (2015), 130; see Arvind Sathi, *Engaging Customers Using Big Data: How Marketing Analytics Are Transforming Business* (Palgrave Macmillan, 2014), 119, referring to Bing, Travelocity, or Priceline's offerings of dynamic pricing to customers; otherwise, such airlines deals would remain unsold.

markets, the large-scale collection of data and its analytics represents a real and legitimate concern regarding the exploitation of consumers.[39]

Based on a pragmatic approach to personalised and group pricing, the digital product markets worthy of being prioritised for scrutiny of data analytics by the UK Competition and Markets Authority are, after residential mortgages, house contents, such as furniture and electronic appliances; cars, including rentals; bathroom and kitchen fittings; and gardening. Compared to everyday food purchases, the former are the most expensive products followed by holiday travel, so that the effects of price discrimination based on big data analytics is likely to be felt harder by consumers.

In contrast, intermediation networks, such as social media, are regarded as more suitable for 'sentiment' analysis of trends, forecasting the growth of customer numbers, and for testing the eventual success of targeted advertising, whereas the latter is reportedly more effective only where there are shopping alternatives locally available.[40] In view of its large audience, Facebook is regarded as a 'megaphone' for channelling marketing messages to customers;[41] a magnet for persuading customers to interact with ads; and a monitoring tool of customers active on this platform.

Both targeted advertising and price discrimination are potentially harmful to consumers. While the former may be targeted by the CMA using its consumer-protection function, the latter remains an acute competition concern.

Hub & Spoke Traditional Conspiracy: B2B	**Dividing Markets**	**Allocating Customers**	**Actual or Future Price Information**	**Future Demand and Trends**
Track & Monitor Atypical	**Geo-tracking of location data**	Price discrimination on	**Socio-economic demographic**	**Behavioural data**, e.g., consumers'

[39] See Barwise and Watkins, (2018), 25, arguing in favour of technology-specific regulation of platforms, 45; on platforms as a new way of coordinating supply and demand, see Coyle (2018), 52; Barrett (2018), who lists the risk of potential discrimination of customers as being second only to the security risk posed by data brokers, 44; for the view that the public does not understand privacy policies and the risk of tracking technologies, see Joseph Turrow, 'Americans and Marketplace Privacy' in Selinger (2018), 160; Julie Brill, 'The Intersection of Privacy and Consumer Protection' in Selinger (2018), 363, urging companies using scoring models to do more to determine whether their own data analytics result in 'unfair, unethical, or discriminatory effects on consumers'. On the economics of price discrimination effects on consumers based on their purchasing history, see Drew Fudenberg and J Miguel Villas-Boas, 'Price Discrimination in the Digital Economy' in Peitz (2012), 255, where firms with significant market power can only benefit from such data; thus, it can also intensify competition for data amongst rivals; Ariel Ezrachi and Maurice E Stucke, *Virtual Competition: The Promise and Perils of the Algorithm-Driven Economy* (Harvard University Press, Massachussetts, 2016), 101; Maurice E Stucke and Allen P Grunes, *Big Data and Competition Policy* (Oxford University Press, Oxford, 2016), 51 ff.; The UK's competition authority (CMA) has recently endorsed personalised price discrimination for smaller businesses and price discrimination based on categorisation for larger corporations, see Competition & Markets Authority, 'Pricing algorithms: Economic working paper on the use of algorithms to facilitate collusion and personalised pricing', CMA 94, 8 October 2018, ‹https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/746353/Algorithms_econ_report.pdf›.

[40] Chaston (2015), 37 and 153; cf. Ari Ezra Waldman, *Privacy as Trust: Information Privacy for an Information Age* (Cambridge University Press, Cambridge, 2018), 62, evidencing how invasive of privacy Facebook's targeted advertising is, in particular, its 'profoundly invasive' mass-aggregation and analysis of data.

[41] Chaston (2015), 152.

Conspiracy: B2C		the basis of **categories of customers**	**data**, i.e., income/salary data, past history of online purchases, loyalty cards etc.	interests, likes and preferences.
Action	New non-tracking rules[42] applicable to all (see EU Geo-blocking Regulation 302/2018)[43] *or* only to dominant online traders	Non-sharing of data from one platform or provider to another. Compliance with the General Data Protection Regulation 679/2016.	Non-sharing of data from one lender or online retailer to another. New rules on monitoring large-scale marketing research of customers' data analytics.	Educating online consumers regarding the potential consequences when using social networking platforms through CMA's consumer-protection function.
Required level	Article 101 TFEU/Chapter 1 Prohibition of the UK Competition Act 1998 Consumer protection for targeted advertising including mobile payments and online sales.	Article 102 TFEU/Chapter 2 Prohibition of the UK Competition Act 1998 Extension of the prohibition of discrimination to online products provided free of charge.	Article 102 TFEU/Chapter 2 Prohibition of the UK Competition Act 1998 New form of abuse of big data analytics.	*Ex-ante* tools, e.g., conditional remedies under the EU Merger Control Regulation 139/2004 and the UK Enterprise and Regulatory Reform Act 2013

While the traditional understanding of a 'hub-and spoke' conspiracy in B2B markets can be adapted to consider a track-and-monitor conspiracy in B2C digital markets, there is a need for a more paternalistic approach to online price discrimination based on tracking engaged in by all online traders, irrespective of whether they are dominant or not, similar to the EU Regulation 302/2018 on Geo-tracking. At the same time, there is a need for consideration of a new type of anti-competitive abuse by dominant digital platforms that engage in the sharing and monitoring of large-scale marketing research through analytics of customers' data by third parties known as data brokers,[44] as highlighted in the above table. While such marketing research is indeed useful for better planning and for manufacturing on demand to avoid over-production and environmental waste, it is simply unethical to intensely monitor consumers for the sole purpose of price gauging based on their personal economic status, interests, or preferences. It is

[42] Exceptions to this rule could be permitted where tracking is of the essence of the services, e.g., a GPS navigator or maps system.

[43] Adopted on 28 February 2018; entered into force on 3 December 2018; and based on airline companies' tracking of customers: Regulation 302/2018, OJ L 60 I/1 [2018] addresses unjustified online sales discrimination based on customers' nationality, place of residence or place of establishment within the internal market ‹https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32018R0302&from=EN› For the US 'Do Not Track' legislative proposals, see Aleecia M McDonald, 'Stakeholders and High Stakes: Standards for DNT', in Selinger (2018), 256.

[44] Data brokers include general marketing data, lead generation services and large advertising websites including social media and search engines, see Barrett (2018), 30.

unacceptably similar to a 'Big Brother surveillance' economic experiment[45] on consumers who are isolated from the real intentions of businesses regarding the latter's strategic pricing decisions.

Question 4: What is the economic impact of the acquisition of smaller firms with relatively small market shares by much larger ones and is this different in the digital space than in other sectors?

In my previous research,[46] I examined several acquisitions by digital monopolists such as Google (Double Click), Microsoft (Yahoo Search, Skype and LinkedIn), Facebook (WhatsApp) and others which – with the exception of Hutchinson 3G UK/Telefonica UK – have unconditionally been cleared by the Commission. The economic impact of the acquisition of innovative companies involved in monitoring traffic and serving targeted advertising, search engine, professional networks as well as instant messaging has been significant due to the combination of users' data analytics from one platform to another. For example, Google acquired DoubleClick's customers, i.e., advertisers and publishers; Facebook acquired WhatsApp's customers' phone numbers and therefore their home addresses; and Microsoft acquired LinkedIn's large database of professional contacts. In the majority of these cases, the acquisition of new datasets was not consistently looked at from the perspective of potential harm to users, and in any event, the economic implications for their privacy had been overlooked. This is because privacy has been interpreted too broadly, and it has not been limited to an economic construct that is able to capture the harm caused to consumers through the acquisition of more data and the combination of such data. In addition, some of these acquisitions have either disappeared (Yahoo Search) or declined in quality (LinkedIn). The theory of harm put forward in *Facebook/WhatsApp* and *Google/DoubleClick* was largely based on the exclusionary effects of the combination of the respective customers' databases.[47] The justification for the dismissal of consumer harm was that a lot of valuable advertising data was not in Facebook's 'exclusive' control and that other market players, too, collect the same kind of data. The argument based on a meeting-competition defence grounded on data analytics is not a plausible one. However, in *Microsoft/LinkedIn,* the same line of argument, namely, that other companies have access to comparable data, had been reiterated. This demonstrates that competition authorities need to adapt the exclusionary test and define a narrower economic concept of privacy that is inclusive of consumer harm.

Question 5: To what extent is it relevant for any identified benefits and harms that consumers receive 'free' services, paid for through their data? How does this affect competition in associated markets, such as the market for online advertising?

We have come a long way from the direct exchange of goods for other goods to cash, the acceptance of plastic cards and disruptive technologies that store payment card data, such as m-wallets, to the recognition of data as money or even as the new currency of the digital

[45] Initially, Big Brother had been conceived to test how people coped with surveillance, but has later shifted to entertainment, see Sarah E Igo, *The Known Citizen: A History of Privacy in Modern America* (Harvard University Press, Massachusetts, 2018), 362.
[46] See Anca D Chirita, 'Data-Driven Mergers under EU Competition Law' in John Linarelli and Orkun Akseli (eds.) *The Future of Commercial Law: Ways Forward for Harmonisation* (Hart Publishing, Oxford, 2019), ‹https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3199912›.
[47] Ibid., 35.

economy.[48] In its *Google Shopping* decision, the Commission endorsed the latter since 'users do not pay a monetary consideration of the use of general search services; they contribute to the monetisation of the service by providing data with each query'. The alternative to free services is subscription-based platforms; it is, however, uncertain whether by paying a premium subscription, such platforms would also cease the collection of relevant data. As long as such platforms continue to attract users, advertising will bring in revenues.

Question 6: How do technologies such as artificial intelligence (AI) and machine learning affect competition, and what are their implications for competition policy? Does algorithmic pricing raise new concerns about competition?

As has been considered above, the scenario of a track-and-monitor conspiracy using large-scale data analytics can no longer be under-estimated. In practice, this would require consideration of the effects of the conspiracy in B2C rather than B2B markets. While the traditional conspiracy relies on exchanges of information from competitors, the new model relies on the data gleaned from consumers. As machine learning is nothing but a sub-set of 'gold' data mining based on artificial intelligence (AI) and pattern recognition extracted from such data,[49] a better understanding of AI is needed rather than a radical overhaul of the existing competition rules. Some commentators have suggested moving beyond this by calling for a policy of algorithmic transparency.[50] It would, indeed, be a welcome development by requiring the source code, which is included in the decision-making of an algorithm, to be disclosed.

Question 7: What tools does competition policy need to deal with issues in the digital economy in a sufficiently timely, effective, and far-sighted manner? To what extent are these in place in the UK?

The best regulatory tool is to offer timely guidance outlining a few principles and explaining how the digital markets require a nuanced approach, whenever necessary, to data that have an economic significance to consumers and disclosures about the larger-scale collection of such data and big data analytics. At the same time, it is necessary to spell out whether the existing tests are sufficiently accommodating of such concerns or entirely dismissive of them as unsuitable. Ultimately, the test of the market-foreclosure-exclusionary effect leading to consumer harm is the fruit of the competition authority's contested guidance to businesses and stakeholders, and not the blueprint of the provisions enacted by the legislator. The guidance was intended to provide consistency across various anti-competitive practices and legal certainty to businesses, but did not capture new technologies or any recent competition law and economic developments in digital markets.

A. What is the appropriate approach to mergers and takeovers in digital markets – what are the key challenges and how should they be addressed?

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[48] See the report of the World Economic Forum, Rethinking Personal Data: A New Lens for Strengthening Trust (May 2014), ‹http://www3.weforum.org/docs/WEF_RethinkingPersonalData_ANewLens_Report_2014.pdf›, referred to by Daniel Greenwood, Arkadiusz Stopczynski, Brian Sweatt, Thomas Hardjono, and Alex Pentland, 'The New Deal on Data: A Framework for Institutional Controls' in Lane (2014), 198; for a similar recognition, see Commission, COMP 39740, *Google Search (Shopping)*, 27 July 2018, published on 18 December 2018, which refers to the monetisation of users' data, paras 158 and 320.

[49] Finley (2014), 213; Chaston (2015), 28, where pattern recognition may reveal hidden relationships that can be used for marketing and promotional strategies.

[50] MacCarthy (2018), 64.

The key challenges involve being prepared to recognise and identify the risks associated with the large-scale analysis of big data and its economic and strategic importance, including having the customers of the merged entity under the microscope for future strategic or tactical pricing decisions. In the event that any such transactions would raise competition concerns, the best approach is an in-depth investigation followed by conditional commitments to ensure that the data would not be combined or subject to large-scale analytics. Exceptionally, one could use the public interest merger to consider privacy and surveillance concerns.

B. What is the appropriate approach to antitrust enforcement (cartels, vertical restraints, and abuse of dominance) in digital markets – what are the key challenges and how should they be addressed?

I have referred above to both cartels and abuse of dominance, outlining the adaptation of the existing rules and a few new ones. On vertical restraints, it is perhaps too early to suggest changes to the framework of analysis of online resales. An initial thought is that examples such as Amazon, a growing and reliable channel for the large-scale distribution of various products, or Wayfair, an advertising platform for furniture and household products, are notable successful business models. Amazon is making short-term losses by under-cutting the original manufacturers' prices, as do many resellers competing aggressively on their discounts offered to final consumers. Amazon's business model is driven by a strategy of attracting even more customers to the distribution platform alongside investing in logistics. In contrast, Wayfair relies on the logistics of the manufacturers, and its discounts are not as high as Amazon's. Both are, however, successful at making deliveries internationally to a segment of consumers who prefer foreign brands or products that cannot be purchased locally. The UK should replicate similar distribution and advertising platform models to other consumers from elsewhere.

Question 8: Are there other policy changes beyond traditional competition tools that could facilitate entry and thus improve competition and economic outcomes?

The entry of many other digital start-ups may be pro-actively encouraged by initiatives that support innovation and offer funding for pioneering ideas rather than imitators.

Question 9: What approaches are being considered and developed by governments and competition authorities in other major economies? What needs to be done internationally and what can be done at the UK level?

As mentioned above, the European paternalistic approach to privacy and data protection has prevailed over recent initiatives to make data accessible to other market players. While competition authorities have further improved their analysis, the sophistication of the digital economy and of the internet system in the presence of so many business models cannot follow a one-size-fits-all approach to consumer harm.

14

Understanding the effects of digital markets

Open consultation Digital Competition Expert Panel

Submission of Prof. Damien Geradin(*)

I. Introduction

I appreciate the opportunity to submit observations to the Digital Competition Expert Panel (the "Expert Panel"). The present observations are based on the research work I have carried out over the past decade on the application of competition rules in the digital economy, in the context of which I have authored papers on two-sided markets,[1] intermediation platforms and the "sharing economy",[2] mobile operating systems,[3] big data,[4] and business models based on the offering of "free" services.[5]

In my scholarly work, I have generally cautioned against an over-extensive application of competition law, and in particular Article 102 TFEU or equivalent provisions in national competition regimes.[6] However, in recent years, I have become increasingly concerned about certain practices pursued by digital platforms, in particular those platforms relying on a two-sided business model with a "free" side and a "monetization" side (i.e., "ad-funded platforms"), such as Google, Facebook or Twitter. Thus, my observations will be generally focused on the competitive issues raised by the platforms pursuing such a business model.

Before turning to the specifics, I would like to make the following general observations.

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1 See, e.g., L. Filistrucchi, D. Geradin et al., "Identifying Two-Sided Markets, 36 (2013) *World Competition*, 33; L. Filistrucchi, D. Geradin et al., "Market Definition in Two-Sided Markets: Theory and Practice", (2014) (10)2 *Journal of Competition Law & Economics* 293.

2 See, e.g., B. Edelman and D. Geradin, "Efficiencies and Regulatory Shortcuts: How Should we Regulate Companies like Airbnb and Uber", 19 (2016) *Stanford Technology Law Review* 293

3 See, e.g., B. Edelman and D. Geradin, "Android and Competition Law: Exploring and Assessing Google's Practices in Mobile", 12 *European Competition Journal* 159 (2016)

4 See, e.g., D. Geradin and M. Kuschewsky, "Competition Law and Personal Data: Preliminary Thoughts on a Complex Issues", 2 (2013) *Revue Concurrences*.

5 B. Edelman and D. Geradin, "An Introduction to the Competition Law and Economics of 'Free'", CPI Antitrust Chronicle (September 2018).

6 See D. Geradin et al., *EU Competition Law and Economics*, OUP, 2013 (Chapter 4).

First, it is important to recognize that no clear answers have been yet given to some questions of considerable importance to the application of competition rules in digital markets. For instance, is the success of some platforms essentially linked to their ability to acquire or process large troves of data or is it primarily due to superior engineering? Moreover, to the extent that data matters to the competitive process, could data-sharing remedies be envisaged considering technical and legal constraints? These are examples of questions that were already raised in competition policy circles a decade ago and on which the debate does not seem to have progressed a great deal.

Second, digital markets are complex and publicly-available information on the inner workings of such markets is scarce. Thus, unless one obtains access to information privately-held by market actors (for instance on how first- and second-price auctions work in online display advertising markets), it is difficult to form an opinion – as an external observer – on the competition challenges created by certain practices and on the way these challenges can be successfully addressed. Thus, while there is a fair amount of commentary on the directions competition policy should take in digital markets, most observations made are unavoidably based on incomplete, and in most cases very incomplete, information.

Third, as a consequence of this "empirical uncertainty", debates have often been dominated – especially in the U.S. – by the extremes. Some commentators have argued that most of the problems associated with digital platforms are not competition problems and, even if there were competition problems, competition authorities should refrain from intervening because market power is ephemerous and there is a significant risk of type-II errors. But proponents of another school of thought, often labelled neo-Brandeisians, have suggested the need for a more draconian application of competition rules and the abandonment of the consumer welfare standard. In my view, both schools of thoughts are misguided. While digital platforms clearly raise important competition issues, the EU and UK competition regimes and standards are sufficiently flexible to address such issues.

In its call for evidence, the Expert Panel produced a list of ten questions on which it wished to obtain evidence. My observations, which do not provide strict answers to these questions but are relevant to several of them, are organised as follows. Section II looks at the reasons why market power may be durable in digital platform markets. Section III discusses why claims against antitrust intervention in digital platform markets are generally overstated. Section IV addresses the competitive concerns linked to discrimination / self-preferencing, as well as the problems linked to the shaping of remedies to address these concerns. Section V discusses other potential forms of exclusionary abuses that may arise from the conduct of dominant platforms. Section VII discusses the risk of exploitative conduct by dominant platforms. Section VIII looks at potential competition concerns in the online advertising markets. Finally, Section IX provides some recommendations.

II. Market power, barriers to entry and countervailing strategies

Arguments are regularly made that market power in such markets is temporary. It is indeed easy to point out to examples of digital platforms that were displaced by more innovative competitors. For instance, social network MySpace was overtaken by Facebook, and the early search engines like Altavista and Yahoo! were supplanted by Google. However, when Facebook overtook MySpace and Google unseated Yahoo and Altavista, those incumbents were much smaller in market capitalization, employees, scope of operation, user base, and every other dimension compared to today's tech giants.

Moreover, certain characteristics of digital platforms tend to make market power durable by rendering entry difficult:

- First, when services are offered for "free" (or, more correctly, without monetary payment), the classic trade-off between quality and price, which allows new entrants to gain market share by offering their products at a somewhat lower level of quality but for a much cheaper price (what has been labelled "disruptive innovation"), is absent.[7] Thus, in the absence of a positive price that can be undercut, entry may be made difficult, especially as it forces the new entrant to compete at the same level of quality of the incumbent. This may not be possible when, as is often the case in digital platform markets, quality depends wholly or partly on scale (see next bullet point).[8]

- Second, digital platform markets may be characterized by the presence of user and monetization "feedback loops".[9] *User* feedback loops arise as more users allow a platform to collect more user data which in turn allows the platform to provide better quality services, which in turn attract a larger number of users. This user feedback loop may also translate into a *monetization* feedback loop where the more data a platform can collect, the better it can target its ads and monetize its services. Whether the presence of such feedback loops can be overcome by smaller providers and new entrants depends on the point at which returns to additional customer information begin to diminish, as well as the extent to which a data disadvantage can be overcome by innovation. These are complex questions to which there are no clear answers.

- Digital platforms may also be characterized by "network effects" (also called network externalities or demand-side economies of scale), which arise when the value of the platform to each user grows with the number of other people using the platform. Such network effects are observable in social networks, such as Facebook, where the

[7] Joseph Bower and Clayton Christensen, "Disruptive Technologies: Catching the Wave," *Harvard Business Review*, January-February 1995.

[8] B. Edelman and D. Geradin, supra note 5.

[9] See A. Lerner, "The Role of Big Data in Online Platform Competition", 27 August 2014, available at http://ssrn.com/abstract=2482780

attractiveness of the platform grows with the number of users. The presence of such network effects may reach a tipping point with the market turning to monopoly.[10]

While these feedback loops and network effects may provide benefits to consumers, they can also "*contribute to the development and durability of platform monopolies.*" [11]

- Finally, there seems to be a fair amount of customer inertia. For instance, preloaded apps may be particularly sticky, although better apps may be available for downloads.[12] Consumers may also be reluctant to change platforms due the (often irrational) fear of losing their data or content should they switch.[13]

Thus, some digital markets indeed appear to tend towards only one or a small number of firms and this is largely due to inherent features of these markets. For instance, to be commercially successful, a new search engine would have to face the impossible equation of having to provide a service that would at the same time (i) be free (as users would not be willing to pay more than for Google Search), (ii) offered at a level of quality equivalent to that of Google Search (as the new search engine would not be cheaper than Google Search), (iii) which in turn hinges to a large extent on the ability to have access to data and develop scale.

Competing against incumbents offering high quality services at zero price thus seems particularly challenging as customers have no incentives to switch to an alternative product whose quality will likely be inferior to start with.

This does not necessarily mean the market entry is not possible in market dominated by such incumbents.[14]

- First, with sufficient capitalization, a platform could try to overcome the presence of user and monetization loops by accepting to incur significant costs to develop a free service at scale, which it would then be able to monetize through ads. For the very large and best-funded entrants, these strategies seem to be possible, though with exceptional expense and risk. And it is not clear this strategy will succeed. For instance, Microsoft's decade-plus commitment to invest in online search, at one point

[10] H. Shelanski, "Information, Innovation, and Competition Policy for the Internet", 6 (2013) *University of Pennsylvania Law Review* 1663, 1682.

[11] Id. at 1684.

[12] See "The Secret to Mobile App Stickiness", 29 September 2016, available at https://www.apppartner.com/secret-mobile-app-stickiness/

[13] See D. Graham-Smith, « Is it time to switch from iOS to Android ?", *The Guardian*, 4 September 2016, available at https://www.theguardian.com/technology/2016/sep/04/iphone-7-versus-android-apps-apple-google-samsung-motorola

[14] This part of the paper draws on B. Edelman and D. Geradin, "An Introduction to the Competition Law and Economics of 'Free'", CPI Antitrust Chronicle, September 2018.

leading to losses of as much as $1 billion per quarter, was not sufficient to allow it to compete on equal terms with Google.[15]

- Second, an entrant could try to offer an entirely new service that does not directly compete with any incumbent, and thus is not vulnerable to the difficulty of undercutting a free incumbent. For example, at its launch, Twitter offered a service that was quite different from Facebook. Now, only rarely does an entrant devise an entirely new type of offering, of broad interest, with potential far-reaching effects. There is also the risk that new innovative services may be acquired by incumbents. For instance, Facebook acquired Instagram, which appeared as an attractive alternative to its social network.

- Third, an entrant may find an opportunity to attract consumers when they are dissatisfied with the incumbents' service despite it being "free." For example, after Facebook faced a series of scandals including data broker Cambridge Analytica siphoning data about 87 million users, as well as Russian meddling and the spread of "fake news," some users indicated that they would leave the service.[16] However, if entry is limited to situations when incumbents face a combination of multiple problems, it will most likely be infrequent.

- Finally, an entrant may attempt to respond to the incumbent's free service, by charging a positive price and eliminating features of the incumbent's service about which consumers are dissatisfied. For example, in response to an incumbent offering free service monetized through advertising, an entrant could instead charge a subscription fee and forego advertising. Netflix's positioning vis-à-vis YouTube broadly fits this pattern. In other circumstances, an entrant may offer its customers both free and paid service, typically the former with ads and the latter without. Spotify's free and paid services fit this approach.

Even where these strategies create opportunities for entrants, there are doubts about their feasibility in the face of today's large and entrenched incumbents. When Google unseated Yahoo and Altavista, those firms were much smaller in market capitalization, employees, scope of operation, user base, and every other dimension compared today's tech giants. Any entrant seeking to oust a dominant tech firm today would face larger, better-organized, multi-product competitors that are better positioned to respond and defend their market position. The idea that market power in digital platforms is ephemerous and that no antitrust intervention is needed thus fails to convince.

[15] David Goldman, "Microsoft's Plan to Stop Bing's $1 Billion Bleeding," CNN Money, September 20, 2011, https://money.cnn.com/2011/09/20/technology/microsoft_bing/ .

[16] Deepa Seetharaman, "Facebook Shares Tumble as Growth Outlook Darkens", *The Wall Street Journal*, 25 July 2018.

III. The overstated case against antitrust intervention: Schumpeterian competition and the risk of Type-II errors

Concerns have been expressed that the conventional antitrust framework, which focuses on prices and output competition, may fail to capture that competitive pressure may come less from actual competitors trying to have a stab at the incumbent's market share than from rivals innovating to supplant the incumbent.[17] In other words, pursuant to Schumpeterian competition, firms compete sequentially for the market as a whole. In this context, antitrust intervention in digital markets is not only superfluous, but – because of the complexity of digital platform markets – it is also subject to type-II (over-enforcement) errors.

While these concerns may be valid, they are not sufficient to justify antitrust inaction when a dominant platform engages in exclusionary behaviour. First, while competition in the high-tech industry often takes place *for* the market rather than *in* the market, this is not always the case. For instance, Google's vertical search engines compete with other firms' verticals, and intervention may thus be necessary when Google leverages its market power in general search to exclude downstream rivals. The same is true for third-party resellers, which compete with Amazon on its e-commerce platform. Such third-party resellers do not try to displace Amazon, but compete on the merits on its platform. Thus, while Google and Amazon may eventually be displaced by more innovative companies (subject to my observations in Section II), they should not be allowed to abuse their market power in the meantime.

Second, the risk of type-II errors should not in and of itself prevent intervention when platforms engage in exclusion. First, while digital markets are complex and competition authorities should exercise their powers with care, competition authorities regularly intervene in markets raising complex technical issues (e.g., telecommunications, financial services, etc.). Moreover, while over-enforcement may not be desirable, type-I (under-enforcement) errors should not be discounted. In fact, such errors may be particularly damaging considering that these platforms not only control access to their own products and services, but also – and this is a critical observation – to third-parties' products and services given their intermediation functions ("bottleneck monopolists").[18]

IV. Vertical foreclosure through self-preferencing

As illustrated by the *Google Shopping* decision of the European Commission, competition problems may arise when a firm that owns a dominant platform (Google Search) competes on

[17] M. Katz and H. Shelanski, "'Schumpeterian' Competition and Antitrust Policy in High-Tech Markets", Fall/Winter 2005, *Competition*, at 47, 49

[18] H. Shelanski, supra note 9, at 1676 ("While a typical monopolist controls its own products and services, a typical bottleneck monopolist both controls access to its own service and can affect access to some number of other products and services. Thus, a digital platform monopolist controls its own product or service as well as access to a much broader universe of products or services; it affects the decisions of a much broader universe of users").

a downstream market (comparison shopping services) with other firms that need to have access to the dominant platform to provide their services.[19] In that decision, the Commission found that Google abused its dominant position by systematically giving prominent placement to its own comparison-shopping service in its search results, while demoting rival comparison shopping services in these results. The abusive conduct identified by the Commission has been labelled as "self-preferencing" in that Google used its dominant platform to give a competitive advantage to its comparison-shopping services over rival services.

A related concern seems to have led the Commission and the Bundeskartellamt to investigate Amazon.[20] While little is known about these investigations, they seem to be focused on Amazon's dual role as a competitor, but also host, to third-party merchants, which sell goods on Amazon's e-commerce platform. Because of this dual role Amazon has access to valuable data on the availability, prices, return rates and popularity of competitors' products, which it could potentially use to stimulate its own retail activities at the expense of third-party sellers on its marketplace.

These cases raise several questions. First, is discrimination / self-preferencing a competition law issue? The Commission and the Bundeskartellamt clearly think it is, and I agree as the risk of foreclosure created by vertical integration is not new in competition law. It is, however, important for competition authorities to articulate a clear theory of harm, as well as limiting principles allowing dominant platforms to distinguish pro-competitive from anti-competitive behaviour. Should, for instance, antitrust intervention be limited to cases where the platform is an "essential facility" or should it be broader? And what should be the demarcation line between benign (or even pro-competitive) discrimination and anticompetitive one? Or should we go further and consider that a company cannot at the same time own the dominant platform and compete on the platform because of the presence of an inherent "conflict of interest"? These are important questions to consider going forward.

Second, what is the best way to remedy situations of anticompetitive discrimination? The remedy offered by Google in response to the Commission's *Shopping* decision seems to do little to address the concerns expressed by the vertical search engines competing with Google.[21] Thus, the approach of the Commission to essentially leave it to Google to offer a remedy responding to the finding of infringement was not successful. The reluctance of the Commission to adopt a precise remedy may be linked to the difficulty to define remedies in

[19] Press Release, "Antitrust: Commission fines Google €2.42 billion for abusing dominance as search engine by giving illegal advantage to own comparison shopping service ", IP/17/1784, 27 June 2017.

[20] R. Toplensky and S. Shannon Bond, EU opens probe into Amazon use of data about merchants, *Financial Times*, 19 September 2018, available at https://www ft.com/content/a8c78888-bc0f-11e8-8274-55b72926558f; R. Toplensky, "German cartel office launches investigation into Amazon marketplace", *Financial Times*, 29 November 2018, available at https://www ft.com/content/ed2d1980-f3ef-11e8-ae55-df4bf40f9d0d

[21] R. Toplensky and M. Acton, "Google antitrust remedy delivers few changes for rivals", *Financial Times*, 27 October 2017, available at https://www.ft.com/content/b3779ef6-b974-11e7-8c12-5661783e5589

digital cases. The adoption of behavioural remedies raises a variety of issues when applied to platforms operating intermediation services not only in terms of design, but also with respect to implementation and monitoring. This is why, although they are often depicted as extreme, structural remedies may present advantages, especially when, as noted above, these platforms not only control access to their own products and services, but also to third-parties' product and services.

As will be further discussed below, one of the downsides with competition cases is that they take a long time to resolve (although the CMA may have a better record than the Commission in this respect) and remedies may come at a time where the market has already tipped in favour of a company. In addition, there may be instances where the platform and a company that may have suffered from what could be perceived as discrimination (e.g., for instance as a result of a change in an algorithm) may be able to resolve the issue without the intervention of a competition authority. Thus, informal dispute settlement mechanisms – possibly led by independent third-parties – allowing users of the platform to voice concerns and giving the possibility to the platform to address them before the issue becomes contentious might be helpful.

V. Other exclusionary issues

While vertical foreclosure has been the main concern of the European Commission, other antitrust concerns may also arise. That is the case of what I would refer to as *innovation-suppressing* conduct, i.e. dominant platform conduct that has the effect of making it harder for other companies to innovate. While some conducts belonging to this category may take the form of vertical foreclosure, others may not. The reason why competition authorities should focus on protecting the ability of firms to innovate is two-fold:

- First, suggesting that competition authorities focus on innovation-suppressing conduct makes sense considering that there is a broad consensus, even among those suggesting that competition authorities should generally not intervene in digital markets (see Section III),[22] that – in these markets – competition is based on innovation, i.e. that incumbents are eventually displaced by more innovative firms.

- Second, the risk that digital platforms engage in innovation-suppressing conduct is particularly heightened considering the large amount of information they are able to collect as part of their intermediation role. For instance, Google Search gives Google unparalleled insight into consumer and market trends and thus the ability to anticipate where competitive challenges may come from, even if such challenges may not necessarily come from direct rivals.

[22] For a good discussion of the Schumpeterian argument, see Shelanski and Katz, supra note 10, at 49 (explaining that "[a]t the heart of the Schumpeterian argument is the assertion that, in important instances, competition primarily occurs through cycles of innovation, rather than through static price or output competition," and that in such instances firms compete "sequentially for the market as a whole").

Without claiming to be exhaustive, I hereafter present several forms innovation-suppressing conduct can take.

Appropriating a platform user's content. For instance, Google has long been accused by Yelp of "scraping" content to fill its own rival site with content and reviews.[23] Google also extracts snippets from news publishers' content, which appear in response to search queries on its SERP or on Google News. As pointed out by a leading scholar:

> "[W]hen viewed from the perspective of innovation, such conduct is damaging, even absent any intellectual property violation. ... Specifically, scraping sends the message that as soon as a firm develops a complementary product that is superior to the platform's proprietary complement, the platform will snatch the improvements for itself. This conduct also removes the platform's incentive to continue developing its own product, thus further magnifying the harm to competition." [24]

While in the case of Yelp scraping could be seen as a form of vertical foreclosure harming a downstream competitor, innovation can also be discouraged when a platform takes advantage of the content produced by businesses that are not direct competitors (e.g., news publishers) as scraping produces the same innovation-suppressing effect.

Suppressing access to data or making such access more difficult. Given the role of user data as a central input to products and services in the digital economy, digital platforms' actions that prevent actual or potential rivals to obtain access to categories of data that are not replicable may produce an innovation-suppressing effect. For instance, restrictions to the portability of online advertising campaign data to competing online advertising platforms may be problematic as they prevent these rival platforms to build scale and improve their services.[25] Similarly, when a platform is able to gather data from the interactions between users and content produced or services offered by third-parties (e.g., online newspapers), these third-parties should obtain easy access to that data as it may be necessary to improve and monetize their services.

Predatory innovation (i.e. the alteration of one or more technical elements of a product to limit or eliminate competition).[26] While predatory innovation is still a "burgeoning" theory of harm in EU competition law, it should receive greater attention in the context of digital platforms, especially when these platforms do not limit themselves to a pure intermediation function. To the extent that a digital platform alters a product or service (e.g., by degrading

[23] See N. Tiku, "Yelp Claims Google Broke Promise to Antitrust Regulators, Wired", 9 December 2017, available at https://www.wired.com/story/yelp-claims-google-broke-promise-to-antitrust-regulators/

[24] See Shelanski, supra note 8, at 1700.

[25] See Press Release, "Antitrust: Commission probes allegations of antitrust violations by Google", IP/10/1624, 30 November 2010.

[26] See Thibault Schrepel, "Predatory Innovation: The Definite Need for Legal Recognition", July 2017, available at https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2997586

interoperability or compatibility with rival products or services) specifically to interfere with the competitiveness of actual or potential competitors, it impedes innovation to the detriment of consumers.[27]

VI. Exploitation

An additional antitrust concern is *exploitation*. There is an inherent "give-and-take" relationship between an intermediation platform and its users. For instance, in return for freely enjoying its social network service, users allow Facebook to collect and use their data to target the display ads that appear in their newsfeed. Business users are also involved in a give-and-take relationship with digital platforms. For instance, while Google's ability to respond to user queries by providing links to news stories is beneficial to Google, publishers also benefit from the traffic that is sent to them in response to such queries.

The give-and-take relationship may, however, become unbalanced when platforms acquire market power. This can lead to user exploitation, not in the traditional form of excessive pricing (as services are free), but by the platform giving less (in the form of lower quality of the rendered service, less privacy, etc.) and taking more (collecting more data, scraping content from publishers, etc.). While some forms of exploitation can be addressed by regulation,[28] there will be instances where competition authorities may wish to step in to prevent digital platforms from engaging in exploitative behaviour. The current Bundeskartellamt investigation against Facebook is a case in point.[29]

VII. Ensuring competitive online advertising markets

Online content providers typically rely on two types of revenues to fund their operations: subscription fees and/or advertising. In some cases, these operators will charge their users subscription fees . That is, for instance, the case of premium newspapers (e.g., the Financial Times) or specialized magazines (e.g., The Economist). But in most instances, advertising is the only source of revenue for online content providers, and even publishers relying on subscription fees need advertising revenues to balance their budget.

While there are different types of online advertising, publishers typically rely on *display* ads,[30] i.e. visual-based advertisements (e.g. texts, images or videos) shown on their website,

[27] See Shelanski, supra note 8, at 1697.

[28] The Commission's proposal for a Regulation on promoting fairness and transparency for business users of online intermediation services (Brussels, 26.4.2018 COM(2018) 238 final 2018/0112 (COD)) takes useful steps in this direction.

[29] See Bundeskartellamt, "Preliminary assessment in Facebook proceeding: Facebook's collection and use of data from third-party sources is abusive", 19 December 2017, available at https://www.bundeskartellamt.de/SharedDocs/Meldung/EN/Pressemitteilungen/2017/19_12_2017_Facebook.html

[30] As opposed to *search* ads, i.e. text-based ads that appear typically above the natural, so-called "organic" search results in the results page of a search engine.

as a source of revenue. Initially, online display advertising was no more complex than ordinary offline advertising, e.g. in print media or TV. Publishers wishing to monetize their available ad space (called "ad inventory") would engage in direct negotiations with advertisers to sell ad space at a given price. But now the sector is dominated by so-called "programmatic advertising", whereby dedicated software and complex algorithms fueled by various categories of user data (behavioural, demographic, etc.) are used to sell and purchase ad inventory within fragments of a second, avoiding "human" negotiation between publishers and advertisers.[31]

Because of its vital importance to advertisers and publishers, healthy competition in the advertising ecosystem is desirable. Yet, despite the spectacular growth of online display advertising, the picture is not entirely rosy. The ad tech sector, which comprises all the intermediaries providing ad intermediation and ad delivery services, is characterized by a high degree of opacity. Moreover, publishers and advertisers are concerned about the so-called "ad tech tax", i.e. the large and opaque fees applied by intermediaries.[32] For instance, The Guardian revealed in 2016 that "in worst case scenarios, for every pound an advertiser spends programmatically only *30* pence actually goes to the publisher", meaning that ad tech intermediaries could extract up to 70% of programmatic revenues.[33] Moreover, while the ad tech sector comprises a wide variety of actors, some of its segments appear to be dominated by a single operator (usually Google), with concerns being expressed that it may engage in both exploitative and exclusionary strategies.[34]

[31] For an excellent introduction to the programmatic revolution, see M. Sweeney, "The Colorful History of Advertising Technology in Just 63 Slides", The Clearcode Blog, 12 May 2015, available at https://clearcode.cc/blog/the-colorful-history-of-advertising-technology-in-just-63-slides/

[32] See for example S. Gatz, "Publishers And the Hidden 'Ad Tech Tax', *AdExchanger*, 1 April 2016, available at https://adexchanger.com/the-sell-sider/publishers-and-the-hidden-ad-tech-tax/; M. Sweeney, "Transparency in Ad Tech: The Problems, Fallouts and Solutions", *The Clearcode Blog*, available at https://clearcode.cc/blog/ad-tech-transparency/;

[33] D. Pidgeon, "Where did the money go? Guardian buys its own ad inventory", *Mediatel Newsline,* 4 October 2016, available at https://mediatel.co.uk/newsline/2016/10/04/where-did-the-money-go-guardian-buys-its-own-ad-inventory/

[34] Google is the market leader in online display advertising, offering, *inter alia*, DoubleClick For Publishers ("DFP"), the leading ad server technology for publishers, and operating the most popular ad exchange ("Ad Exchange") where ad impressions are sold to advertisers through real-time auctions. However, it has been suggested that Google might use its strength in DFP and its informational advantage to favour its own Ad Exchange vis-à-vis competing ad exchanges. See G. Sloane, "WTF is Dynamic Allocation?", *Digiday*, 14 April 2016, available at https://digiday.com/media/wtf-dynamic-allocation-google-ad-auctions/; G. Dunaway, "Rethinking the Ad Server", AdMonsters, 23 August 2016, available at https://www.admonsters.com/rethinking-ad-server/. In response to industry backlash and the rise of alternative technologies, Google introduced in 2018 a new feature in DFP, apparently exposing Ad Exchange to competition from other ad exchanges. However, commentators are *still* concerned about the lack of transparency of Google's offer. See B. LaRue, "Last Stand for Google's 'Last Look': What's Next?", *Admonsters*, available at https://www.admonsters.com/last-stand-googles-last-look-whats-next/ (noting that Google's latest solution, called Exchange Bidding, "still comes out looking something like a black box, unified auction or no"); S. Sluis, "Google Removes Its 'Last-Look- Auction Advantage, *AdExchanger*, 31 March 2017 available at https://adexchanger.com/platforms/google-removes-last-look-auction-advantage/. As regards *exploitative* concerns, Google could take advantage of the existence of consecutive second-price auctions that take place within Ad Exchange and engage in arbitrage, pocketing the difference between the price charged to the advertiser and the price paid to the publisher. The ad intermediaries' possibility for

It is thus not surprising that competition authorities are looking closely at the competitive dynamics in online advertising. The French Competition Authority launched in 2016 a sector enquiry in the online advertising sector and in March 2018 it published its opinion, *"in which it analyses a very complex market, characterized by a fragile competitive equilibrium"*.[35] The German Competition Authority announced on 1 February 2018 that it launches its own sector enquiry into online advertising,[36] and released a related short paper.[37] In the UK, the Select Committee on Communications appointed by the House of Lords observed in its 2018 Report the lack of transparency in digital advertising and advised that the CMA "*conduct a market study of digital advertising to investigate whether the market is working fairly for businesses and consumers.*"[38]

Thus, while the attention of commentators has largely focused on the competition problems created by digital platforms on the "free" side of the market, it is important for the Expert Panel to keep in mind that maintaining healthy competition in online advertising markets is critical for the thousands of publishers, large and small, which offer valuable content to Internet users. But for online display advertising, many such publishers would not subsist, and the Internet would be impoverished.

VIII. Recommendations

While it is easier to identify competition problems than to address them, I would nevertheless make the following suggestions:

1. Given the conflicting messages as to the role of competition law and policy in digital markets, the Panel could helpfully try to distinguish the issues associated with digital platforms that are competition problems from those that are not, and which should therefore be addressed by other instruments (e.g., regulation). It would be wrong,

arbitrage has been flagged up in specialized press articles. See R. Benes, "In programmatic, buyers sometimes don't know what type of auction they're bidding in", *Digiday*, 30 June 2017, available at https://digiday.com/marketing/ad-buyers-programmatic-auction/; R. Benes, "Ad buyer, beware: How DSPs sometimes play fast and loose", *Digiday*, 25 March 2017, available at https://digiday.com/marketing/dsp-squeeze-buyers/

[35] Opinion no. 18-A-03 of 6 March 2018 on data processing in the online advertising sector, available at http://www.autoritedelaconcurrence.fr/doc/avis18a03_en_.pdf

[36] Press release of Bundeskartellamt of 1st January 2018, "Bundeskartellamt launches sector inquiry into market conditions in online advertising sector", available at https://www.bundeskartellamt.de/SharedDocs/Meldung/EN/Pressemitteilungen/2018/01_02_2018_SU_Online_Werbung.html

[37] Bundeskartellamt, "Competition and Consumer Protection in the Digital Economy ": Online advertising, available at https://www.bundeskartellamt.de/SharedDocs/Publikation/EN/Schriftenreihe_Digitales_III.html?nn=3600108

[38] House of Lords, Select Committee on Communications, 1st Report of Session 2017-2019 "UK advertising in a digital age", 11 April 2018

however, to dismiss issues such as a privacy as non-competition problems as concentration and market power may lead to sub-optimal levels of privacy.

2. The Panel should reflect and make recommendations on the issue of discrimination / self-preferencing by dominant platforms as this is perceived as a critical issue by online content providers that rely on traffic generated by the platforms. Unless it is properly addressed, this issue will continue to be a major source of conflict in the digital environment. While I strongly believe that discrimination / self-preferencing by dominant platforms is a competition issue, I also recognize that antitrust intervention is this domain need to be carefully thought through.

3. Remedies have been a thorny issue for competition authorities ever since the adoption of the first *Microsoft* decision in 2003. Behavioural remedies create significant problems of design and implementation. Some form of structural or quasi-structural remedies may thus be needed, but they should be carefully considered as they may cause efficiency losses. As a first step, informal dispute settlement mechanisms could be considered as a way to resolve disputes between platforms and their users before they become contentious.

4. Although the competition issues raised by dominant platforms regularly make headlines in the press, the output of competition authorities has been very limited in this area. Moreover, the two Google decisions of the European Commission have been adopted after extremely lengthy investigations. Decisions of competition authorities and judgments of the courts are public goods as they many not only bring competition infringements to an end and provide remedies restoring competition, but they also provide guidance to undertakings active in the sectors concerned.

   The Expert Panel should thus make recommendations to fast-track competition cases in the digital sector. Complaints should be either swiftly rejected if they have no merit or prioritized and handled with adequate resources if they raise serious concerns. A greater turnover of cases would (i) improve the knowledge pool on the competition issues created by digital platforms within the agency and in the public sphere and (ii) reduce the risk of missing important cases both in terms of harm to consumers and in the opportunity these cases may offer to set important principles.

5. The panel should pay attention to online advertising markets given their critical importance of advertising revenues for online service providers, and the increased degree of concentration in the ad tech markets. Because of the opacity of this sector, it would make a great deal of sense to recommend the CMA to conduct a market study on this sector as the Select Committee on Communications appointed by the House of Lords has already advised.

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An EU Competition law Analysis of Online Display Advertising in the Programmatic Age

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12 December 2018

Abstract

Online display advertising, whereby publishers display visual-based advertisements (e.g. texts, images or videos) on their website against remuneration, represents a large source of revenues for publishers, large and small, offering valuable content to Internet users. But for online display advertising, many such publishers would not subsist, and the Internet would be impoverished. Display advertising is also critical to advertisers, in particular when they seek to raise "brand awareness" among consumers.

Because of its vital importance to advertisers and publishers, healthy competition in the advertising ecosystem is desirable. Yet, despite the spectacular growth of online display advertising, the picture is not entirely rosy. In the "programmatic" era, where ad inventory is sold through computerized decision-making processes managed by "ad tech" intermediaries, the online display advertising sector is characterized by a high degree of opacity, and publishers and advertisers have expressed concerns about the so-called "ad tech tax", i.e. the large and opaque fees applied by various intermediaries. Moreover, while the ad tech sector comprises a wide variety of intermediaries, its main segments are dominated by Google, with concerns being expressed that it may engage in both exploitative and exclusionary strategies.

It is thus not surprising that several national competition authorities are looking closely at the competitive dynamics in online advertising, and in November 2018 the French Competition Authority has announced that it would open proceedings in this area. Even so, at this stage, there is little information in the public domain regarding the competition issues that may arise in the display advertising sector and there is no scholarly paper devoted to this subject.

Against this background, the purpose of this paper is to explore the display advertising ecosystem and discuss the competition law issues that may arise in this sector as a result of Google's control of the ad tech value chain. The paper describes the display advertising ecosystem with a focus on the technologies and tools comprising the ad tech market. It then identifies the competition law issues that may arise in the ad tech markets. It first discusses market definitions and shows that Google may be dominant on several ad tech markets, and then describes the way in which programmatic display advertising functions in practice. Finally, the paper identifies several Google conducts which may amount to abuse of a dominant position in breach of Article 102 TFEU.

Keywords: Online advertising, display advertising, advertisers, publishers, auctions, ad exchange, header bidding, AMP, digital platforms, ad tech, big data, Google, competition law, abuses of a dominant position, exploitation, vertical foreclosure, self-preferencing.

JEL codes: K21, L12, L41, L86.

I. Introduction

Since the first-ever clickable banner ad for AT&T appeared on HotWired.com in October 1994,[1] online advertising has evolved into a major business, with an estimated global turnover exceeding 260 billion dollars in 2018.[2] Online advertising represents a major stream of revenue not only for tech giants offering popular services monetized by ads, such as Google, Twitter and Facebook, but also for thousands of website owners, from major online newspapers with millions of readers to blogs catering for specialized audiences. In 2017, online advertising represented 98% of Facebook's revenues,[3] as well as more than 86% of Google's and Twitter's earnings.[4] The same year, the New York Times Company, which owns the eponymous journal, earned approximately one third of its total revenues from online advertising,[5] the rest of its revenues being essentially generated through subscription fees.

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1 See http://thefirstbannerad.com/

2 Source: Statista https://www.statista.com/outlook/216/100/digital-advertising/worldwide

3 Facebook Inc., Form 10-K filed to SEC, "Annual report pursuant to section 13 or 15(d) of the securities exchange act of 1934 for the fiscal year ended December 31, 2017", p. 64, available at http://d18rn0p25nwr6d.cloudfront.net/CIK-0001326801/c826def3-c1dc-47b9-99d9-76c89d6f8e6d.pdf

4 Alphabet Inc., Form 10-K filed to SEC, "Annual report pursuant to section 13 or 15(d) of the securities exchange act of 1934 for the fiscal year ended December 31, 2017", p. 58, available at https://abc.xyz/investor/static/pdf/20171231_alphabet_10K.pdf?cache=7ac82f7; Twitter Inc., Form 10-K filed to SEC, "Annual report pursuant to section 13 or 15(d) of the securities exchange act of 1934 for the fiscal year ended December 31, 2017", p. 104, available at http://www.viewproxy.com/Twitter/2018/AnnualReport2017.pdf

5 The New York Times Company, Form 10-K filed to SEC, "Annual Report pursuant to Section 13 or 15(d) of the Securities Exchange Act of 1934 for the fiscal year ended December 31, 2017", p. 55, available at https://s1.q4cdn.com/156149269/files/doc_financials/annual/2017/Final-2017-Annual-Report.pdf Subscription revenues make up the most of the remaining two thirds of the total revenues. One can discern a downward trend in the advertising revenue of the company: in 2017 revenue from

The ever-growing popularity of online advertising reflects the growth of the Internet, which has now become the most popular medium advertising format, ahead of linear TV.[6] Other than the increased penetration of Internet usage worldwide, the main catalyst for this development is linked to the unprecedented ability offered by online advertising tools and technologies (collectively referred hereafter as "ad tech") exploiting various categories of user data to target audiences that are interested in specific products or services.[7]

While *search* advertising represents a large part of the online advertising industry, this paper focuses on what is referred to as *display* advertising since, it represents a large, and in some cases the only, source of revenues not only for large tech companies, but also for a myriad of publishers, large and small, which offer valuable content to Internet users.[8] But for online display advertising, many such publishers would not subsist, and the Internet would be impoverished. Display advertising is also critical to advertisers, in particular when they seek to raise "brand awareness" among consumers.

Because of its vital importance to advertisers and publishers, healthy competition in the advertising ecosystem is desirable. Yet, despite the spectacular growth of online display advertising, the picture is not entirely rosy. In the "programmatic" era, where ad inventory is sold through computerized decision-making processes managed by "ad tech" intermediaries, the online display advertising sector is characterized by a high degree of opacity, and publishers and advertisers have expressed concerns about the so-called "ad tech tax", i.e. the large and opaque fees applied by various intermediaries.[9]

advertising accounted for 33% of total revenues, as opposed to 37% and 40% in 2016 and 2015 respectively.

6 G. Slefo, "Desktop And Mobile Ad Revenue Surpasses TV For The First Time", *AdAge*, 26 April 2017, available at https://adage.com/article/digital/digital-ad-revenue-surpasses-tv-desktop-iab/308808/

7 Targeting is an advertising technique that consists of customizing promotional content delivered to users on the basis of criteria such as their browsing behaviour or interests (behavioural targeting), the theme and content of a website (contextual targeting), the geographical location of an individual (geographical targeting), their social, demographic and economic characteristics, such as age, gender, income, etc. (sociodemographic targeting), or the time, day or week (time targeting). The definition is derived from the Opinion no. 18-A-03 of 6 March 2018 on data processing in the online advertising sector (available in English at http://www.autoritedelaconcurrence fr/doc/avis18a03_en_.pdf), p. 121.

8 For the distinction between search and display advertising, see *infra* p. 5

9 "A. Bruell, "Inside The Hidden Costs of Programmatic", *AdAge*, 14 September 2015, available at https://adage.com/article/print-edition/inside-hidden-costs-programmatic/300340/; S. Gatz, "Publishers And the Hidden 'Ad Tech Tax', *AdExchanger*, 1 April 2016, available at https://adexchanger.com/the-sell-sider/publishers-and-the-hidden-ad-tech-tax/; N. Neumann, "Ad Tech Transparency And the Question of Market Manipulation", *AdExchanger,* 1 May 2017, available

For instance, The Guardian revealed in 2016 that "*in worst case scenarios, for every pound an advertiser spends programmatically only 30 pence actually goes to the publisher*", meaning that ad tech intermediaries could extract up to 70% of programmatic revenues.[10] Moreover, while the ad tech sector comprises a wide variety of intermediaries, its main segments are dominated by Google, with concerns being expressed that it may engage in both exploitative and exclusionary strategies. [11]

It is thus not surprising that competition authorities are looking closely at the competitive dynamics in online advertising. The French Competition Authority launched in 2016 a sector enquiry in the online advertising sector, followed by a stakeholder consultation. On 6 March 2018 the Autority made public its opinion, *"in which it analyses a very complex market, characterized by a fragile competitive equilibrium"* (the "FCA Opinion").[12] The German Competition Authority announced on 1 February 2018 that it was launching its own sector enquiry into online advertising, "*[d]ue to the great economic importance of this sector for advertisers and content providers active on the Internet and in view of discussions about the difficult competitive environment in this market",*[13] and released a short paper on the same topic.[14] In the UK, the Select Committee on Communications appointed by the House of Lords noted in its 2018 Report the lack of transparency in digital advertising and advised that the Competition and Markets Authority (CMA) "*conduct a market study*

at https://adexchanger.com/data-driven-thinking/ad-tech-transparency-question-market-manipulation/; M. Zawadzinski, "Why a Lack of Transparency is Killing the Potential of Programmatic Buying", *The Clearcode Blog*, available at https://clearcode.cc/blog/programmatic-buying-transparency/; M. Sweeney, "Transparency in Ad Tech: The Problems, Fallouts and Solutions", *The Clearcode Blog*, available at https://clearcode.cc/blog/ad-tech-transparency/; "Quality, Transparency of Inventory Top Programmatic Buying Fears", *eMarketer*, 1 November 2016, available at https://www.emarketer.com/Article/Quality-Transparency-of-Inventory-Top-Programmatic-Buying-Fears/1014663

[10] D. Pidgeon, "Where did the money go? Guardian buys its own ad inventory", *Mediatel Newsline,* 4 October 2016, available at https://mediatel.co.uk/newsline/2016/10/04/where-did-the-money-go-guardian-buys-its-own-ad-inventory/

[11] See Part III "Online advertising and EU competition law", *infra* p. 11 et seq.

[12] Press release of the Autorité de la Concurrence of 6 March 2018, "Sector-specific investigation into online advertising", available in English at http://www.autoritedelaconcurrence fr/user/standard.php?id_rub=684&id_article=3133&lang=en; Opinion no. 18-A-03 of 6 March 2018, supra note 7.

[13] Press release of Bundeskartellamt of 1st January 2018, "Bundeskartellamt launches sector inquiry into market conditions in online advertising sector", available at https://www.bundeskartellamt.de/SharedDocs/Meldung/EN/Pressemitteilungen/2018/01_02_2018_SU_Online_Werbung html

[14] Bundeskartellamt, "Competition and Consumer Protection in the Digital Economy ": Online advertising, available at https://www.bundeskartellamt.de/SharedDocs/Publikation/EN/Schriftenreihe_Digitales_III html?nn=3600108

of digital advertising to investigate whether the market is working fairly for businesses and consumers."[15] On 12 October 2018, the independent Digital Competition Expert Panel launched a public consultation "*to conduct an independent review of the state of competition in the digital economy.*" The questions to which interested parties are invited to respond concern, inter alia, competition in online advertising.[16]

Of these different initiatives, the FCA Opinion is the only one that specifically focuses on display advertising, but it remains at a fairly high level of generality. It has been reported, however, that the French Competition Authority may initiate proceedings against specific undertakings based on the findings of its Opinion,[17] and on 8 November 2018 the Authority announced "*the opening of litigation investigations on abusive #data collection and processing as well as access restrictions*."[18] Even so, at this stage, there is little information in the public domain regarding the competition issues that may arise in the display advertising sector and we are not aware of any scholarly paper devoted to this subject.

Against this background, the purpose of this paper is to explore the display advertising ecosystem and discuss the competition law issues that may arise in this sector as a result of Google's control of the ad tech value chain. We should at this point offer a word of caution. As the readers will perceive, online display advertising is highly complex as its mechanics involve multiple electronic processes, including real-time auctions, performed by computers in milliseconds. Thus, the technical parts of this paper represent our best effort to describe these processes in a manner that is accessible to competition law and economics practitioners, while the legal analysis seeks to apply EU competition rules to the ad tech ecosystem. Our competition analysis is tentative at this stage given the limited amount of publicly available information on some of the practices that create competition concerns. Yet the stakes are high considering the critical importance of display advertising for both advertisers and publishers, and it is hoped that the abovementioned initiatives taken by competition authorities will throw some light on a rather opaque sector.

15 House of Lords, Select Committee on Communications, 1st Report of Session 2017-2019 "UK advertising in a digital age", 11 April 2018, available at https://publications.parliament.uk/pa/ld201719/ldselect/ldcomuni/116/116.pdf

16 See https://www.gov.uk/government/consultations/digital-competition-expert-panel-call-for-evidence/digital-competition-expert-panel

17 M. Rosemain & G. Barzic, "France may probe Google and Facebook over online ad dominance", *Reuters*, 6 March 2018, available at https://www reuters.com/article/us-france-advertising-competition/france-may-probe-google-and-facebook-over-online-ad-dominance-idUSKCN1GI15B

18 See https://twitter.com/Adlc_/status/1060459904417316864

The paper is divided into four parts. Part II describes the display advertising ecosystem with a focus on the technologies and tools comprising the ad tech market. Part III discusses the competition law issues that may arise in the ad tech markets. It first discusses market definitions and shows that Google appears to be dominant in several ad tech markets. It then describes the way in which programmatic display advertising functions in practice, and outlines several Google conducts which may amount to abuse of a dominant position in breach of Article 102 TFEU. Part IV concludes.

II. The display advertising ecosystem: A complex world with multiple actors

In this Part, we introduce the distinction between search and display advertising (Section A) and discuss the rise of so-called "programmatic advertising", as well as the significant changes it has brought in the online advertising landscape (Section B). Then, we present the various actors that intermediate between advertisers and publishers (Section C).

A. Introduction to display advertising

As a starting point, it is helpful to distinguish two main forms of online advertising, i.e. *search* advertising and *display* advertising.

Search advertising refers to text advertisements displayed above or below the search results of a search engine each time a user enters a search query that matches with a keyword on which advertisers bid. For example, when a user enters a search query in Google (e.g. "cars for rent"), Google will display in its Search Engine Results Pages (SERPs) in addition to (and usually above) so-called "organic" search results (i.e. natural results that are displayed according to the search engine's algorithm) "paid" search results, i.e. ad links.[19] Search advertising is said to be most successful in terms of "conversion",[20] in that the user entering the search query expresses her interest in a given product or service, and is thus more likely to perform the desired action.

Display advertising is closer to traditional offline advertising. Display ads are visual-based advertisements (e.g. texts, images or videos) displayed on the website of a publisher. An example of display advertising is a banner on the top of a newspaper

[19] Advertisers wishing to have their ads shown in Google's SERPs compete with other advertisers through a real-time auction organized by Google's "AdWords".

[20] Conversion is defined as a campaign visitor or recipient performing the desired action. This may be a purchase, filling in a form, downloading a document or a visit behavioural model. Conversion can also be an action carried out offline, such as a phone call or a store visit. The action considered to be a conversion depends on the context of the campaign, the type of activity and the objectives assigned to a target or campaign. The definition is derived from the FCA Opinion, supra note 7, p. 116.

webpage promoting a new car model or a video promoting a new blockbuster. While conversion may be lower than in the case of search advertising, display advertising is said to be more suitable for the purpose of raising "brand awareness" among consumers.

B. The programmatic revolution

Initially, online display advertising was no more complex than ordinary, offline advertising, e.g. in print media or TV. Publishers wishing to monetize their available ad space (called "ad inventory" or simply "inventory") engaged in direct, bilateral negotiations with advertisers in order to sell ad space at a given price. Such "manual" media buying had several drawbacks. First, it was time-consuming and required a dedicated salesforce to conduct the negotiations. Moreover, publishers faced the "fill" risk, i.e. that they would be left with unsold inventory. Finally, the widespread use of Internet brought with it the emergence of thousands of websites with available ad space, which could not practically be sold directly to advertisers.

The answer to those inefficiencies was provided by technological advances that made it possible for advertisers and publishers to have a completely automated and seamless ad inventory buying/selling process. "Programmatic advertising", as it is known, consists in automated decision-making, where dedicated software and complex algorithms fueled by various categories of user data (behavioural, demographic, etc.) are used to sell and purchase ad inventory within fragments of a second, avoiding "human" negotiation between publishers and advertisers.[21]

In its most popular form, called programmatic real-time bidding ("RTB"), *each time* a user visits the website of a publisher, advertisers are invited to bid for the available ad space in order to display their advertisement to the particular user (called "ad impression") in a *real-time auction*. The highest bidder wins the ad impression and gets to serve the ad that the user will actually see on the website. Remarkably, the whole process from the moment the user types in his/her browser the URL of the publisher's

21 For an excellent introduction to the programmatic revolution, see M. Sweeney, "The Colorful History of Advertising Technology in Just 63 Slides", *The Clearcode Blog*, 12 May 2015, available at https://clearcode.cc/blog/the-colorful-history-of-advertising-technology-in-just-63-slides/ ; M. Sweeney, "How Real-Time Bidding (RTB) Changed Online Display Advertising",*The Clearcode Blog*, 8 January 2015, available at https://clearcode.cc/blog/real-time-bidding-online-display-advertising/; I. Simpson, "Real-Time Bidding (RTB) & Programmatic: One and the Same?", *The Clearcode Blog*, 13 April 2016, available at https://clearcode.cc/blog/difference-between-rtb-programmatic/; M. Zawadziński, "Understanding RTB, Programmatic Direct and Private Marketplace", *The Clearcode Blog,* 13 August 2018, available at https://clearcode.cc/blog/rtb-programmatic-direct-pmp/

website until the ad is finally shown lasts only fragments of a second, usually about 300-400 milliseconds.[22]

Initially, programmatic advertising was used to facilitate the sale of "remnant" inventory, i.e. inventory that publishers had not managed to directly sell to advertisers. Publishers would prefer to sell their most expensive, high-yield inventory (called "premium", e.g. the top of the home page of an online newspaper) through direct sales. However, that is no longer the case. Programmatic advertising, once associated with cheap ad inventory of dubious quality, is being increasingly used to sell "premium" inventory. It is reported that by 2019, 67% of global digital ads will be bought programmatically,[23] while according to a report by eMarketer, more than 80% of digital display ads in the US will be bought programmatically in 2018. [24]

Programmatic advertising has brought with it a number of important changes. First, there has been a shift from the *context* (i.e. the content of the website) to the *user*. Advertisers place less emphasis on *where* their advertisement will be shown, and instead base their decision according to the specific user that will be exposed to the ad. If the user is within the target group of the campaign set up by the advertiser, the latter will be willing to display its ad even on websites whose content bears no relationship to its product. For example, while luxury watch makers historically sought to associate their ads with certain types of content (e.g., the "how to spend it" page of the Financial Times, which features many luxury items), this is no longer necessarily the case as advertisers are now able to reach tailored audience segments that correspond to their campaign goals regardless of the website they visit.

Second, user data are more valuable than ever. In order to target a particular user, it is crucial that advertisers acquire access to data about *that* user (e.g. behavioural data extracted from browsing history, sociodemographic data such as age and gender or geographical data) to which they may wish to show their ad. The more (and better) user

[22] To put this into context, a blink of the eye on average takes about 400 milliseconds.

[23] A. Schiff, "Zenith: Programmatic Display Will Eat The World By 2019", *AdExchanger*, 20 November 2017, available at https://adexchanger.com/online-advertising/zenith-programmatic-display-will-eat-world-2019/ (noting that "[t]he main takeaway is that advertisers are spending more on programmatic and that trend is only accelerating").

[24] See https://www.emarketer.com/content/more-than-80-of-digital-display-ads-will-be-bought-programmatically-in-2018 Moreover, new forms of programmatic advertising have emerged, such as *programmatic direct*, which are quite similar to the traditional one-to-one negotiations between publishers and advertisers, but with the assistance of dedicated software optimizing media buying.

data advertisers have, the higher they are willing to bid for a user within their target group, leading in principle to higher revenues for the publisher. If, on the other hand, advertisers have limited data about the user, they will take a more cautious approach and bid lower (the bid is "blind").

Third, programmatic advertising has given rise to so-called "ad tech" companies, that is operators that use dedicated software to intermediate between the two sides of the chain, i.e. publishers and advertisers, and facilitate the process of ad inventory buying and delivery of ads to the user.[25] The emergence of these multiple actors has at the same time led to unprecedented complexity, even for those "in the know",[26] to the effect that the display advertising ecosystem is often described as opaque and lacking transparency.

At its most basic, advertisers are paying for access to ad inventory and publishers are compensated for granting such access. The challenge is to figure out what happens in between them. This is an important question, since it has been suggested that publishers may end up obtaining as little as 30% of what advertisers pay,[27] and there are reasons to believe this may be due to a lack of competition in the ad tech market. Even though the existence of multiple actors could give the impression of a fragmented landscape with dispersed competitors, it has been suggested that Google has managed to hold a stronghold, in that it is virtually the market leader across all the steps of the value chain. But first it is helpful to present the multiple actors and explain their role.

C. Key actors and products in display advertising

Within the display advertising ecosystem, the traditional actors, i.e. publishers (the sellers of ad inventory) and advertisers (the buyers of ad inventory), are supplemented by a multitude of other parties that facilitate exchanges between them, either by

[25] For an explanation of ad tech, see I. Simpson, "What Exactly Is Ad Tech", *The Clearcode blog*, 14 December 2016, available at https://clearcode.cc/blog/what-is-adtech/

[26] An industry commentator notes in a recent article that "[i]f you count the third-party pixels running on any publisher's website, you will immediately see how complicated and convoluted the once simple process of putting an ad on a web page has become", see R. Lala, "Is It Too Late For Publishers To Take Back Control?", *AdExchanger,* 11 July 2018, available at https://adexchanger.com/the-sell-sider/is-it-too-late-for-publishers-to-take-back-control/. See also Bannister, "Has Sell-Side Ad Tech Become Too Complex?", *AdExchanger*, 16 March 2018, available at https://adexchanger.com/the-sell-sider/has-sell-side-ad-tech-become-too-complex/ (noting that "[c]omplexity is here to stay […] The question for many publishers is whether they can navigate this minefield of complexity and find partners that help them simplify things and maximize their revenue at the same time"); I. Simpson, "Complex Relationships in Digital Advertising", *The Clearcode Blog*, 14 April 2016, available at https://clearcode.cc/blog/digital-advertising-relationships/

[27] See *supra* note 11.

providing intermediation services or by providing the necessary technology tools for the delivery of ads.

The key actors are the following:[28]

- **Publishers** (e.g. online newspapers) serve user content (e.g. news articles) that is monetized by selling ad inventory to advertisers.

- **Advertisers** (e.g. car manufacturers) buy ad inventory on publishers' webpages to promote their brand to targeted users.

- **Publisher Ad Servers** are tools that publishers use to manage their ad inventory. A publisher ad server determines and records how ad inventory is filled each time a user visit the publisher's website.[29] Examples are Google's DoubleClick For Publishers ("DFP"), recently rebranded as "Google Ad Manager" after its integration with AdX (see below),[30] the OpenX ad server and the AdZerk ad server.

- **Advertiser Ad Servers** are tools that advertisers use to manage their ad campaigns. An advertiser ad server performs two primary functions: it (a) stores and delivers the advertisement (called "creative" in ad tech jargon) and (b) helps advertisers monitor and optimize their ad campaign by tracking where ads are served and providing detailed reporting on their performance (e.g. click-through rates, etc.).[31] An example is Google's DoubleClick Campaign Manager, recently rebranded to "Display & Video 360".

- **Supply Side Platforms (SSPs)** organize demand for ad inventory and help the publisher choose the most profitable ad to display.[32] Traditionally, SSPs were used by publishers to connect to ad exchanges to sell their inventory. However, over the years SSPs have evolved, with many now functioning as ad exchanges

[28] See also the FCA Opinion, pp. 24-35.

[29] For an excellent description of ad servers, see M. Zawadzinski, " What is an Ad Server and How Does It Work?", *The Clearcode Blog*, available at https://clearcode.cc/blog/what-is-an-ad-server/

[30] For the sake of clarity, we retain the original brand names of Google's ad tech tools.

[31] Click-Through Rate ("CTR") is a performance indicator that measures the ratio of the number of clicks logged on a specific advertisement to the number of times it is displayed. This rate gives the percentage of users who view a banner and activate it by clicking on it. The definition is derived from the FCA Opinion, p. 116

[32] For an excellent description of SSPs, see M. Zawadzinski & M. Wlosik, " What Is a Supply-Side Platform (SSP) and How Does It Work?", *The Clearcode Blog*, 18 October 2018, available at https://clearcode.cc/blog/what-is-supply-side-platform/

themselves, allowing publishers to connect directly to DSPs rather than connecting through an ad exchange. For this reason, ad tech specialists often use the terms SSP and ad exchange interchangeably. SSP examples are Google's Ad Exchange ("AdX"), AppNexus, PubMatic and One by AOL.

- **Demand Side Platforms (DSPs)** manage the purchasing of ad inventory for advertisers via a single management interface. DSPs are used by advertisers to connect to an ad exchange/SSP and buy ad inventory.[33] DSPs may also include data processing functionalities to help advertisers find the most effective impressions for their ads. Examples of DSPs are Google's DoubleClick Bid Manager (DBM), DataXu, MediaMath and Amazon DSP.

- **Ad Exchanges** are digital marketplaces for ad inventory where supply and demand meet. Traditionally, publishers supply ad inventory through SSPs and advertisers bid in real-time through DSPs. Examples of ad exchanges are Google's AdX, AppNexus, The Rubicon Project, OpenX and One by AOL. As noted above, SSPs and ad exchanges, while traditionally separate services, are increasingly provided for as integrated solutions, such as in Google's AdX, which has been recently integrated with DFP to form Google Ad Manager.

- **Ad Networks** pool ad inventories from a large number of publishers and then sell them in slices to advertisers. [34] Ad networks can buy and sell directly, buy and sell inventory on ad exchanges, or some combination of both. An example is Google's "AdSense," which allows small publishers ("partner sites") to sell ads to Google demand sources. AdSense is accessed through AdWords, a program that enables advertisers to create ads, which will appear on relevant Google search results pages and Google's network of partner sites. Google partner sites form the Google Display Network (GDN), which comprises more than two million websites and is said to cover over 90% of people active on the Internet. [35]

- **Data Management Platforms (DMPs) and data providers** are responsible for collecting, storing, organizing and analyzing massive amounts of data

[33] For an excellent description of DSPs, see M. Sweeney, "What Is a Demand-Side Platform (DSP) and How Does It Work?", *The Clearcode Blog*, 10 February 2015, available at https://clearcode.cc/blog/demand-side-platform/

[34] For an excellent explanation of ad networks, see M. Zawadzinski, "What Is an Ad Network and How Does It Work?", *The Clearcode Blog*, available at https://clearcode.cc/blog/what-is-an-ad-network-and-how-does-it-work/

[35] See https://support.google.com/google-ads/answer/2404191?hl=en

collected from various sources (first-party and third-party data) creating unique user profiles, often across different devices. Examples of DMPs are BlueKai (Oracle), Weborama and Adobe Audience Manager. DMPs are usually linked to a DSP to help advertisers target their audience.[36] Examples of data providers include comScore and IAS.

Publishers have thus at their disposal two ways to sell their inventory to advertisers: either *directly* or *indirectly* through the use of intermediaries such as SSPs, DSPs and ad exchanges. However, even if publishers and advertisers engage in direct deals, they still need ad serving technology tools to manage their ad inventory and ad campaign respectively, i.e. publisher ad servers and advertiser ad servers.

III. Online advertising and EU competition law

Now that the reader is familiar with the actors in the display advertising ecosystem, it is possible to explore and flag up some key competition law issues arising in this sector. We first look at market definition and dominance (Section A). We find that there are reasons to believe that the ad tech markets as currently defined by competition authorities stay at too high a level of generality and should be disaggregated into more precisely defined markets. We also find that evidence suggests that Google may be dominant on some ad tech markets. We then identify several Google conducts, which may produce exploitative and exclusionary effects in breach of Article 102 TFEU (Section B).

A. Market definition and dominance

While the past decisional practice of the European Commission in merger control cases and the FCA Opinion provide useful guidance, there are still many open questions when it comes to market definition and dominance.

1. Market definition

Market definition is a factually-intensive inquiry and there is a dearth of publicly available data to assess the substitutability between certain online display advertising products and services. Despite this informational constraint, this section defines relevant markets based on precedents and commentary in the specialized press.

[36] For an excellent description of DMPs, see M. Zawadzinski, "What is a Data Management Platform (DMP) and How Does it Work?", *The Clearcode Blog*, available at https://clearcode.cc/blog/data-management-platforms/

a. Online advertising as a separate product market

A first question is whether online advertising is a distinct product market or whether it is effectively constrained by offline advertising, especially TV advertising. The matter is settled since the European Commission has repeatedly held that online advertising does not belong to the same relevant market as offline advertising, mainly relying on the enhanced specificity of online advertising, i.e. its advanced targeting possibilities, and the different pricing mechanisms used.[37] The French Competition Authority upheld this distinction in its 2018 Opinion.[38]

b. Search vs display advertising

The next question is whether the market for online advertising should be sub-segmented between *search* and *non-search* (i.e. display) advertising. Such distinction was considered by the European Commission in *Google/DoubleClick,*[39] but the issue was ultimately left open. The same approach was adopted in subsequent merger control decisions.[40] In its 2010 opinion focusing on *search* advertising, the French Competition Authority adopted a clear distinction between search and display advertising, citing the disparity in the number of users of display and search advertising and the difference in capabilities of the two advertising types stemming from the limited text nature of search ads.[41] The same view was expressed in its 2018 opinion.[42] On the other side of the

[37] Decision of 11 March 2008, COMP/M.4731 *Google/DoubleClick*, par. 45, 46 and 51; Decision of 18 February 2010, COMP/M.5727 *Microsoft/Yahoo! Search Business*, par. 61; Decision of 9 September 2014, COMP/M.7288 *Viacom/Channel 5 Broadcasting*, par. 36, 38 and 40; Decision of 30 October 2014, COMP/M.7217 *Facebook/WhatsApp*, par. 75 and 79, Decision of 13 May 2016, COMP/M.7987 *Towerbrook Capital Partners/Infopro Digital*, par. 10; Decision of 6 December 2016, COMP/M. 8124 *Microsoft/LinkedIn* par. 159; Decision of 21 December 2016, COMP/M.8180 *Verizon/Yahoo*, par 25.

[38] FCA Opinion, par. 174.

[39] Decision of 11 March 2008, COMP/M.4731 *Google/DoubleClick*, par. 56.

[40] Decision of 18 February 2010, COMP/M.5727 *Microsoft/Yahoo! Search Business*, par. 75; Decision of 18 February 2010, COMP/M.5727 *Microsoft/Yahoo! Search Business*, par. 75; Decision of 4 September 2012, COMP/M.6314, *Telefonica UK/Vodafone UK/Everything Everywhere/JV*, par. 151; Decision of 4 September 2012, COMP/M.6314, *Telefonica UK/Vodafone UK/Everything Everywhere/JV*, par. 151; Decision of 30 October 2014, COMP/M.7217, *Facebook/WhatsApp*, par. 76; Decision of 6 December 2016, COMP/M. 8124 *Microsoft/LinkedIn* par. 161; Decision of 21 December 2016, COMP/M.8180 *Verizon/Yahoo*, par. 25.

[41] Autorité de la Concurrence, 2010 No 10-A-29 Opinion, p. 28: "display is reserved for branding objectives and search-based ads for performance objectives."

[42] FCA Opinion, par. 179.

Atlantic, the Federal Trade Commission (FTC) observed in the *Google/DoubleClick* merger that search and display advertising were not substitutes for each other.[43]

c. Ad intermediation

As noted above, advertisers may purchase ad inventory either through the channel of *direct* sales or through that of *intermediated* sales. In *Google/DoubleClick,* the European Commission considered that *"a separate market for intermediation in online advertising can be defined in view of the fact that there is no substitute for the service provided by intermediaries for the sale of smaller publishers' inventory and for the sale of (at least) part of the remnant inventory of larger publishers that also use the direct sales channel."*[44] The Commission seems to have included ad networks and ad exchanges within the market for ad intermediation.[45] Further subdivision between ad intermediation in search ads and ad intermediation in non-search (display) ads was considered but left open.[46] The Commission maintained this approach in subsequent merger decisions.[47]

The 2007 FTC decision in the *Google/DoubleClick* merger similarly distinguished between advertisements directly sold by publishers and advertisements sold through intermediaries, noting that publishers are able to charge higher prices for direct sold inventory than inventory sold through intermediaries.[48] The FTC held that the market for ad intermediation services includes ad exchanges and ad networks.[49]

[43] "Statement of Federal Trade Commission concerning Google/DoubleClick", FTC File No. 071-0170, p. 3: "[T]he evidence shows that the sale of search advertising does not operate as a significant constraint on the prices or quality of other online advertising sold directly or indirectly by publishers or vice versa."

[44] Decision of 11 March 2008 COMP/M.4731 *Google/DoubleClick*, par. 68.

[45] Id. par. 61, where it is stated that "the overwhelming majority of Google's competitors (that is to say ad networks and ad exchanges)" (emphasis added)

[46] Id. par. 70-73

[47] Decision of 18 February 2010, COMP/M.5727 *Microsoft/Yahoo! Search Business*, par. 82; Decision of 11 October 2013, COMP/M.6967 *BNP Paribas Fortis/Belgacom/Belgium Wallet*, par. 64; Decision of 4 September 2012, COMP/M.6314, *Telefonica UK/Vodafone UK/Everything Everywhere/JV*, par. 175.

[48] Statement of Federal Trade Commission concerning Google/DoubleClick, FTC File No. 071-0170, p. 4: "The evidence shows that ad intermediation is not a substitute for publishers and advertisers who place display ads into directly acquired ad inventory or vice versa. … Likewise, from the advertisers' perspective, ads served by intermediaries are not substitutes for directly placed ads."

[49] Id., p. 5: "There are two types of ad intermediation products: ad networks and ad exchanges. Ad networks and ad exchanges are alike in that they both aggregate advertising inventory. Ad networks are intermediaries that aggregate or purchase advertising inventory from a group of websites and sell this inventory to advertisers or ad agencies, taking a share of the revenue from each sale. Ad exchanges differ in that they aggregate inventory by providing platforms for advertisers and

d. Ad server technology services

In *Google/DoubleClick*, the Commission defined a separate market for the provision of online display ad serving (i.e. services provided by ad servers) and believed that this market could be further distinguished depending on whether such ad services are rendered to publishers or advertisers.[50] The French Competition Authority upheld the distinction between ad intermediation and ad serving in a 2010 decision.[51] In its 2018 opinion it noted that there is indeed *"some convergence between ad servers and technical intermediation services (DSPs, SSPs, ad exchanges etc.)"*,[52] but it observed that "*a similar observation was made in 2008 [in Google/DoubleClick] by the Commission*",[53] concluding that "*[n]o information emerged from the consultation [...] would call into question the conclusions of the Commission's analysis.*"[54]

The above analyses are helpful, especially in that they distinguish between the market for ad serving technology and ad intermediation. However, these analyses have up until now stayed at a high level of generality and, in our opinion, do not fully reflect the diversity of products and services comprising the programmatic advertising ecosystem. Further market sub-segmentation is thus desirable.

For example, it is doubtful that DSPs belong to the same market as ad exchanges/SSPs. DSPs form a distinct market since they do not compete with ad exchanges, but they participate in the auctions organized by these exchanges/SSPs. Moreover, it seems appropriate to segment the market for ad serving technology between ad servers for publishers and ad servers for advertisers. Ad servers for publishers fulfil substantially different needs than ad servers for advertisers and are targeted to different customer groups.[55] It would seem unlikely that in the case of a price increase e.g. of ad servers for advertisers, advertisers would switch to an ad server which is designed for publishers. It is telling that Google itself presents its technology solutions for publishers

publishers to list and bid for inventory. The evidence shows that the market in which ad networks and ad exchanges compete is relatively nascent, dynamic, and highly fragmented."

50 Decision COMP/M.4731, *Google/DoubleClick*, par. 74-81

51 Autorité de la Concurrence, decision no. 10-DCC-152 of 3 November 2010, Axel Springer AG/Se Loger, at par. 23-24

52 FCA Opinion, par. 185.

53 Ibid.

54 Ibid.

55 "Why do publishers and marketers have separate ad servers?", *Ad Ops Insider*, 23 February 2010, available at http://www.adopsinsider.com/ad-ops-basics/why-do-publishers-and-marketers-have-separate-ad-servers/.

(DFP) and advertisers (DCM) as distinct products, as the French Competition Authority observed in its 2018 Opinion.[56]

In sum, we believe that the ad tech sector comprises at least the following markets: (i) a market for intermediation in online advertising (comprising ad exchanges and ad networks); and (ii) a market for ad serving technologies, which should be further segmented between ad servers for publishers and ad servers for advertisers. This does not exclude that further markets may have to be defined to account for additional ad tech products.

2. Dominance

It is settled case-law that the concept of dominance found in Article 102 TFEU refers to "*a position of economic strength enjoyed by an undertaking, which enables it to prevent effective competition being maintained on a relevant market, by affording it the power to behave to an appreciable extent independently of its competitors, its customers and ultimately of consumers*."[57] In examining whether a particular undertaking holds a dominant position on a relevant market, regard is had to the market share of the undertaking and its competitors, as well as to "other factors", namely whether there are barriers to entry or expansion that hinder new competitors from entering the market or existing market players from expanding.[58] Thus, as in the case of market definition, the assessment of dominance is a fact-intensive exercise.

It is often suggested that Google has a strong grip on the display advertising ecosystem. For example, a 2015 *Forbes* article refers to a DFP crash affecting more than 55.000 websites as "*a stark reminder of how an established player like Google has quietly*

[56] FCA Opinion, par. 181

[57] Case 27/76 *United Brands Company and United Brands Continentaal v Commission* (1978) ECR 207, par. 65; Case 85/76 *Hoffman-La Roche & Co. v Commission* (1979) ECR 461, par. 38

[58] In its Guidance Paper on Article 102 TFEU, the Commission notes that "[t]he assessment of dominance will take into account the competitive structure of the market, and in particular the following factors: constraints imposed by the existing supplies from, and the position on the market of, actual competitors (the market position of the dominant undertaking and its competitors), constraints imposed by the credible threat of future expansion by actual competitors or entry by potential competitors (expansion and entry), constraints imposed by the bargaining strength of the undertaking's customers (countervailing buyer power). See 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 (Text with EEA relevance) (2009/C 45/02) par. 12

achieved dominance over the so-called 'ad tech' industry."[59] The author notes that Google "*is now the largest and/or dominant player*" in each ad tech market (including SSPs, DSPs and ad servers).[60] In its 2018 Opinion, the French Competition Authority observes that in the ad intermediation and ad serving sectors, Google "*has held a leading position since its acquisition of DoubleClick in 2008*."[61]

In fact, DoubleClick marked only the beginning of a series of acquisitions, through which Google managed to become present in virtually every segment across the value chain between publishers and advertisers. In 2010, Google expanded by acquiring AdMob, the leading ad network for mobile.[62] The same year Google bought leading DSP Invite Media[63] and in 2011 it acquired leading SSP AdMeld,[64] which it then integrated to AdX.[65] Google thus now offers the leading ad server for publishers (DFP), an ad server solution for advertisers (DoubleClick Campaign Manager), an ad network (AdSense which is part of the Google Display Network and is accessed by advertisers through AdWords), the leading ad exchange/SSP (AdX), the leading DSP (DoubleClick Bid Manager), as well as its own powerful data management platform (Google Analytics).

The French Competition Authority paid particular attention to Google's acquisitions in its 2018 Opinion, observing that "*[t]hese acquisitions generally counteract the limited barriers to entry and expansion as they prevent new players from reaching a significant size and being able to compete with the positions of established stakeholders*".[66]

[59] A. Grunes, "Google's Quiet Dominance Over The 'Ad Tech' Industry", *Forbes*, 26 February 2015, available at https://www forbes.com/sites/realspin/2015/02/26/googles-quiet-dominance-over-the-ad-tech-industry/#1448aaca5b78

[60] Ibid.

[61] FCA Opinion, par. 218

[62] D. Frommer, "Google Buys AdMob For $750 Million In Stock", *Business Insider*, 9 November 2009, available at https://www.businessinsider.com/google-to-acquire-mobile-ad-network-admob-for-750-million-in-stock-2009-11?IR=T

[63] E. Schonfeld, "Google Confirms Invite Media Acquisition, Brings Bidding To Display Ads", *Techcrunch*, 3 June 2010, available at https://techcrunch.com/2010/06/03/google-confirms-invite-media/?guccounter=1. Google then rebranded Invite Media to DoubleClick Bid Manager.

[64] M. Learmonth, "Google Acquires Ad-Optimization Firm AdMeld For $400 Million", *AdAge*, 9 June 2011, available at https://adage.com/article/digital/google-acquires-ad-optimization-firm-admeld-400-million/228108/

[65] See https://www.admeld.com/

[66] FCA Opinion, par. 239. See also par. 105, noting that "[s]ince the early 2000s, Google has acquired around 200 companies."

The presence of Google across the value chain also means that it may have a unique data advantage.[67] In its 2018 Opinion, the French Competition Authority observes many players pointed out that Google:

> "only let[s] advertisers who buy ad space via their buying platforms mine data generated from the services they publish. This means that Google combines supplying its data and providing intermediation services and ad servers for advertisers (AdWords, the DCM ad server and the DBM DSP), which would seem to give it an advantage over its competitors. Advertisers can define audience segments based on several types of data that only Google is able to collect. This includes user data, Google's first-party data from the use of Google services, data on websites and third-party inventories that Google sells through the Google Display Network, AdWords and DoubleClick AdX, and data from third-party websites and applications that use DoubleClick and share data with Google".[68]

Finally, the French Competition Authority found that Google has an additional competitive edge, in that it "*is one of the rare companies to offer both display and search advertising services to advertisers.*"[69] That "*enables it to offer dual-channel data analytics services.*"[70]

Now, when one takes a more granular approach based on the ad tech markets identified in Section A above, publicly-available evidence suggests that Google may have a dominant position on some of these markets. For example, the French Competition Authority in its 2018 Opinion observes that "*Google's DSP, DBM [DoubleClick Bid Manager], appears to be the DSP that generates the largest revenue, and which has significant growth. […] no DSP has currently reached this level of revenue on a global level, including AppNexus and Mediamath*."[71]

Moreover, many commentators and industry participants consider that DFP is the dominant ad server for publishers. A 2016 article published in *The Drum* observes that "*Google's DoubleClick for Publishers is by far the most dominant one [ad server for*

[67] See M. Ingram, "How Google and Facebook Have Taken Over the Digital Ad Industry", *Fortune,* 4 January 2017, available at http://fortune.com/2017/01/04/google-facebook-ad-industry/ (noting that "[d]ata on users and their preferences and behavior is the Holy Grail for most advertisers, and the reality is that Google and Facebook have orders of magnitude more data than their nearest competitors.")

[68] FCA Opinion par. 143 (emphasis added)

[69] Id. par. 144

[70] Id. par. 147

[71] FCA Opinion, par. 221

publishers] the market".[72] A 2018 article in *MediaPost* states that DoubleClick is "*by far the dominant ad server used by advertisers, agencies and digital publishers*",[73] while according to Datanyze report cited in the FCA Opinion, Google has a market share of more than 70% of the ad servers in France.[74]

Google's position in the ad server market seems also protected by various factors. First, there is the presence of switching costs. An industry commentator notes that *"[a]s a publisher, replacing your primary ad server is not a trivial task. Think of it like doing a mid-flight engine swap on an airplane. Except that it's your revenue engine. It's hard to imagine many publishers wanting to take such a risk*."[75] Moreover, given that DFP is offered to publishers virtually for free,[76] competitors may find it harder to attract DFP customers since they cannot compete on price by undercutting DFP's fees. Finally, given the close connection (in fact today, full integration) between DFP and AdX, some customers may be concerned that leaving DFP may affect their revenues from AdX.[77]

Finally, Google's AdX seems to dominate the ad exchange market. According to market data published by Datanyze, Google's Ad Exchange has in November 2018 a market share of 62.65%, far ahead of the next competitor, AppNexus, with a market share of 13.44%.[78]

B. Google's possible abusive conducts in ad tech markets

As noted above, the mechanics of display advertising are complex as they involve multiple electronic processes, including real-time auctions, performed in milliseconds by computers. In this context, we first present a technical discussion of such processes, based on extensive research on online sources and conversations with experts (Sub-

[72] R. Shields, "Header bidding versus Google First Look", *The Drum*, 22 August 2016, available at https://www.thedrum.com/news/2016/08/22/header-bidding-versus-google-first-look

[73] J. Mandese, "Google Discloses Results Of 'Exchange Bidding,' Boosts Publisher Yield >40%", *MediaPost,* 16 February 2018, available at https://www mediapost.com/publications/article/314702/google-discloses-results-of-exchange-bidding-bo.html

[74] FCA Opinion, par. 223

[75] R. Vidakovic, "The Beginner's Guide To Header Bidding", *AdProfs*, available at https://adprofs.co/beginners-guide-to-header-bidding/

[76] DFP comes into two versions: DFP Small Business which is free and DFP Premium which is used by publishers generating significant traffic (more than 90 million impressions per month). Even in the case of DFP Premium the ad serving fees are considered very low.

[77] For an explanation of how that could happen, see *infra* page 26.

[78] See https://www.datanyze.com/market-share/ad-exchanges (last visited 25 November 2018).

section 1). Based on this technical discussion, we then identify Google's practices that may give rise to competition concerns (Sub-section 2).

1. How does programmatic display advertising work in practice?

In this sub-section, we discuss the mechanics of the real-time auctions that determine the advertiser that will get to display its ad to the user each time the latter visits a website.[79] For ease of exposition – but also because it is often the case in real world given DFP's prominence – our example involves a publisher's website using DFP, as it *currently* functions and assuming that the publisher has enabled a recent DFP feature called "Exchange Bidding."[80] We further assume that the publisher's website is part of the popular Google Display Network ("GDN") which is accessible to advertisers through AdWords.[81]

When a user visits the website, the user's browser calls DFP which has an ad arbitration mechanism to determine which ad will be served.[82] As part of that mechanism, DFP first examines whether any *directly* sold ad is eligible to serve. If there is no eligible directly sold ad,[83] DFP invites Google's AdX as well as any connected third-party ad exchanges to submit a bid for the ad impression.[84] Google's AdX will in turn run its own auction, inviting participating DSPs/ad networks to submit a bid.[85] Each DSP/ad network will in turn run its own auction, inviting advertisers to submit a bid. In other words, DFP initiates a series of sequential auctions: in the first auction, advertisers compete with each other within a specific DSP/ad network, e.g. AdWords; in the second auction, DSPs compete with each other within a specific exchange, e.g. Google's AdX; and in the third auction, AdX competes with connected third-party ad exchanges within DFP.

[79] The reader is referred to the Annex for a step-by-step description of ad selection and delivery, from the moment a user types in its browser the URL of the publisher's website until the winning ad is finally displayed.

[80] On Exchange Bidding, see *infra* p. 27

[81] https://support.google.com/google-ads/answer/2472739?hl=en&ref_topic=3121944

[82] See Google's ad selection white paper, available at https://support.google.com/admanager/answer/1143651?hl=en

[83] In fact, DFP offers AdX (and connected third-party exchanges in the case of Exchange Bidding) the chance to win the impression *even if* a directly sold ad is eligible to serve, provided its delivery goal is not compromised. This possibility – introduced as a DFP feature called Enhanced Dynamic Allocation – is explained in more detail in the Annex. See also https://support.google.com/admanager/answer/3721872?hl=en

[84] It is important to note that DFP calls competing ad exchanges to submit a bid *only* if the publisher has enabled Exchange Bidding, on which see *infra* p. 27.

[85] See https://support.google.com/admanager/answer/152039?hl=en

a. The first auction (AdWords)

As soon as DFP initiates the above procedure, AdWords passes on information about the user to advertisers that have an AdWords account and invites them to submit their bids to win the ad impression.[86] Advertisers use the information received to calculate how much they will bid – if they bid at all – and return their bids, expressed on a Cost-Per-Click (CPC) basis (e.g. the advertiser bids to pay 4 € for each time the user clicks on its ad). AdWords then selects the highest bid, which wins the auction. However, the advertiser does not pay what it has actually bid. Instead, the advertiser pays only what is needed to rank immediately above the second-highest bidder, which is usually 1 cent more. For that reason, the auction is called a "second-price auction".[87] An example can help illustrate this type of auction. If advertiser A bids 3 € CPC, advertiser B bids 4 € CPC and advertiser C bids 2 € CPC, the winning advertiser B will pay 3.01 € CPC.

b. The second auction (AdX)

The AdWords auction is over, but that does not necessarily mean that advertiser B will get to serve its ad on the page visited by the user. The reason is that AdWords is not the only platform connected to AdX. There are other ad networks/DSPs connected to AdX, which, just like AdWords, invite advertisers that have an account with them and run their own auctions (typically second-price) and come up with their highest bid. These ad networks/DSPs will now compete with AdWords for the ad impression in a *new* auction, organized by Google's AdX. Publishers should normally benefit from such competition, since it is possible that a competing ad network/DSP might offer a higher bid than AdWords. In this auction, bids are expressed on a different basis, namely on a Cost-Per-Mille ("CPM") basis (i.e. the price paid for every thousand impressions of the same ad, hence the name). This auction is *again* second-price. For example, if DSP1 bids 10 € CPM, DSP2 bids 11 € CPM and AdWords bids 12 € CPM, the winner, AdWords, gets to pay 11.01 € CPM, i.e. slightly more than the second-highest bidder. The second auction hosted by AdX is over.

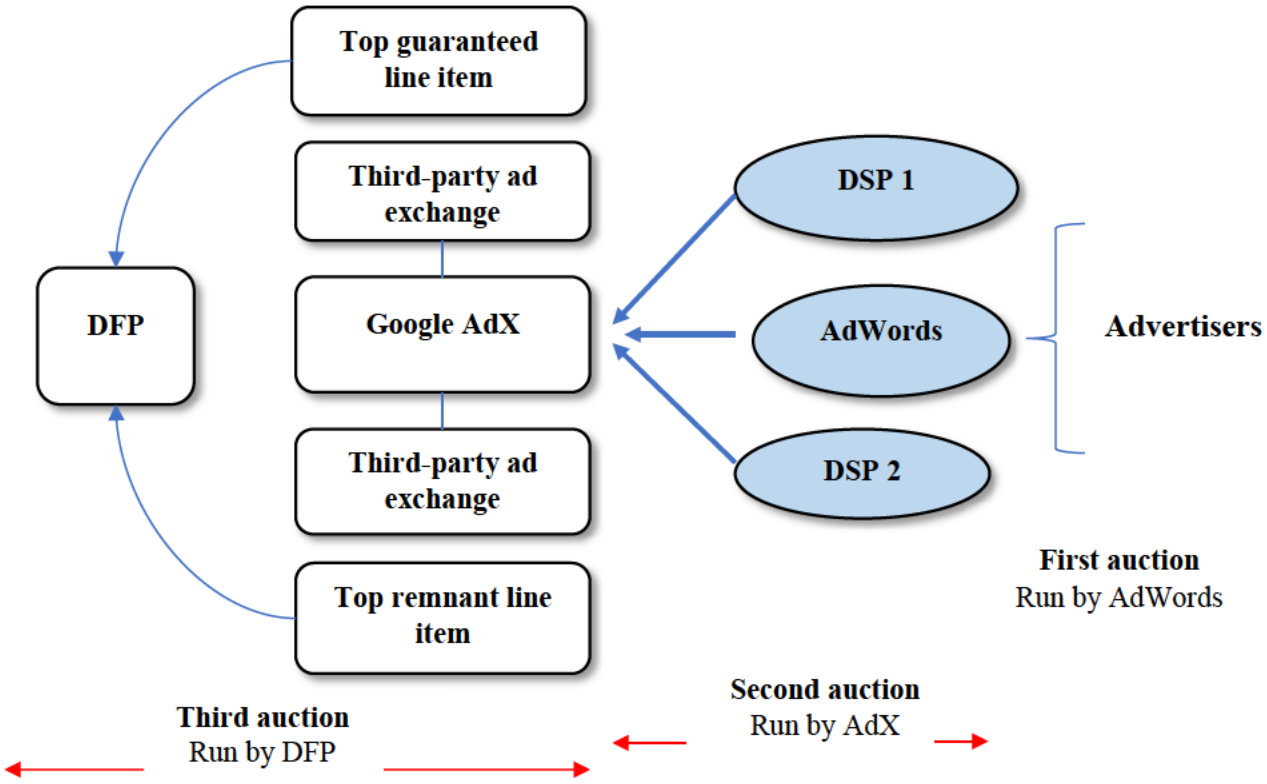
[86] See https://support.google.com/google-ads/answer/2996564?hl=en

[87] For an excellent description of second-price auctions, see M. Zawadzinski, "How Do First-Price and Second-Price Auctions Work in Online Advertising?", *The Clearcode Blog*, available at https://clearcode.cc/blog/first-price-second-price-auction/

c. The third auction (DFP with Exchange Bidding enabled)

Just like Google's AdX runs the above auction, so do third-party ad exchanges that the publisher has connected with AdX by enabling Exchange Bidding. These third-party exchanges compete with AdX in a unified auction organized by DFP. The publisher should in theory benefit from competition between various ad exchanges, since in a particular case one exchange (say, OpenX) may return a higher bid than the others and thus maximize revenue. In contrast to the previous auctions, this auction is a *first-price* auction, i.e. the publisher is paid what the highest bidder bids.

The following graph graphically illustrates the successive auctions described above.[88]



As we discuss hereafter, publishers have generally been uneased with this third auction, concerned that Google might attempt to favour its own ad exchange vis-à-vis competing ad exchanges in a way that harms their revenues. In order to understand such concerns,

[88] The reader is referred to the Annex for an explanation of line items in DFP. Essentially, a *guaranteed* line item represents a directly sold ad, i.e. an ad whose delivery the publisher has promised to an advertiser at a given rate or within a certain time period. AdX may nevertheless "beat" the guaranteed line item in a particular case and get to serve the ad if it solicits a sufficiently high bid. In the case of *remnant* line items, on the other hand, the publisher has not promised the delivery of the ad.

one needs to first explore the evolution of this third auction process. As we will see, the DFP ad selection mechanism has undergone significant changes.

Waterfalls

Under the so-called waterfall system, publishers using DFP could connect the latter with several exchanges, so that they would avoid any risk of relying on only one exchange and ending up with unsold inventory (as one ad exchange might not value the impression and not bid). However, the various exchanges *would not* compete with each other. Instead, they would be ranked according to their *average historical yield* (i.e. how much money they had made on average for the publisher in the past) in a waterfall-like sequence.[89] Each time an ad impression was available, DFP would give priority to directly sold ads.[90] Once there were no more eligible directly sold ads, a bid request for the ad impression would be sent to the exchange ranked *first* in the waterfall:

- If the first exchange bought the ad impression, the exchanges lower in the waterfall *would not* be invited to bid and the ad selection would be completed.

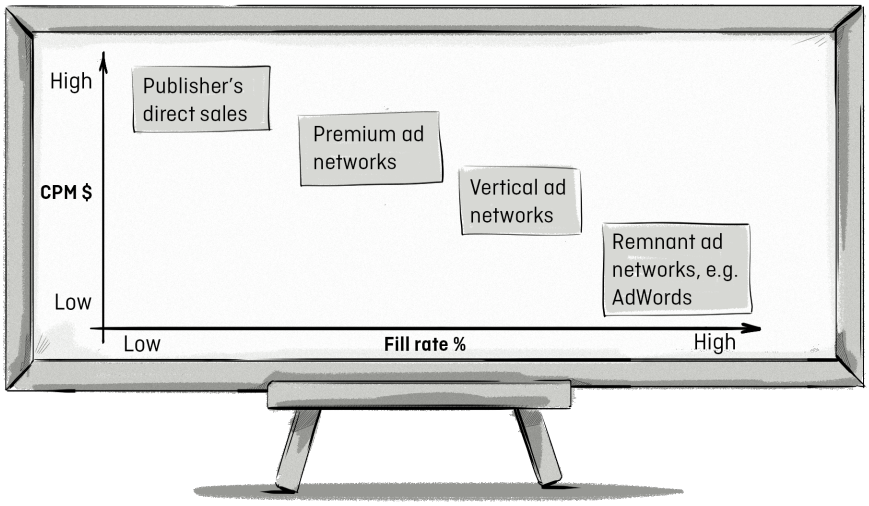
- If the first exchange did not buy the ad impression, the latter would be offered for sale to the exchange immediately below in the waterfall at a *lower* price. That procedure would continue until the ad impression would be finally sold to an exchange. The "deeper" the ad impression would cascade into the waterfall, the lower the price at which it was offered for sale.

- If no one expressed interest in buying the ad impression, the "fallback" option for the publisher would be to fill the ad space with an ad promoting its own business (so called "in-house" ad).

[89] For an excellent description of the waterfall process, see M. Zawadzinski, "What is Waterfalling and How Does It Work?", The Clearcode blog, 1 September 2016, available at https://clearcode.cc/blog/what-is-waterfalling/; P. Bannister, "As Header Bidding Rises, It's More Important Than Ever to Understand The Waterfall", *AdExchanger*, 10 February 2016, available at https://adexchanger.com/the-sell-sider/as-header-bidding-rises-its-more-important-than-ever-to-understand-the-waterfall/. Publishers would set the waterfall within DFP by setting *remnant* line items for the various ad exchanges and assigning them an *estimated* bid based on their average historical yield. It is important to note that this does not include any connection between such exchanges and AdX. Such connection takes place only in Exchange Bidding and only if the competing exchange has accepted to connect to AdX.

[90] Directly sold ads were thus typically illustrated as being on the top of the waterfall.

The following graph illustrates the waterfall setup.

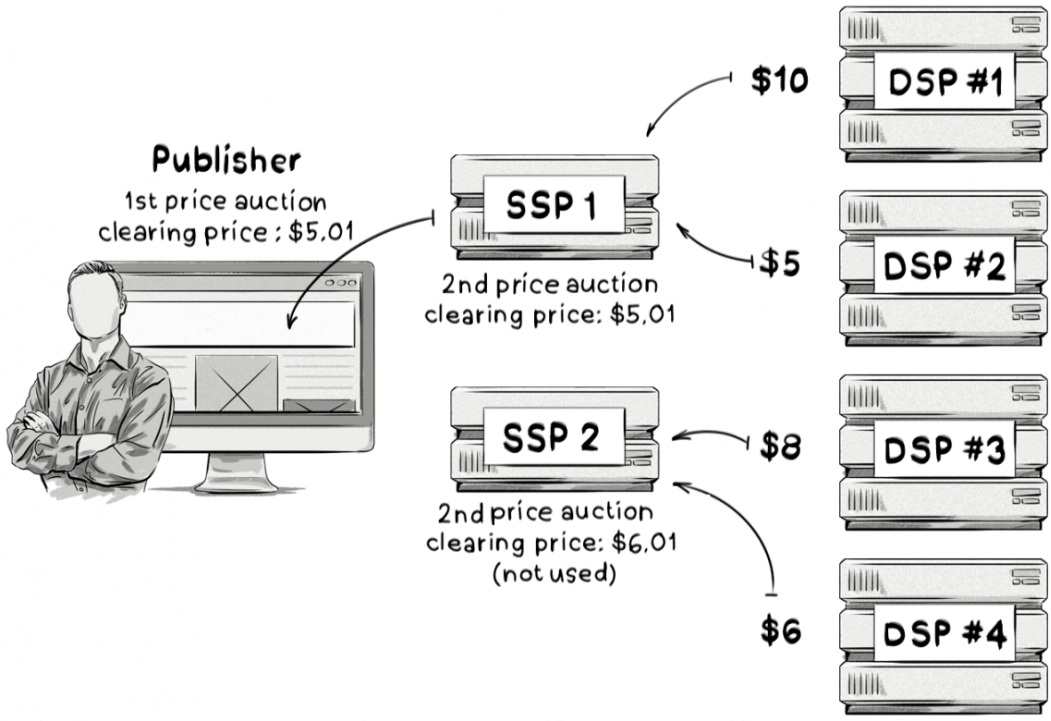


(source: The Clearcode Blog)

The waterfall setup described above helped publishers to reduce the risk that ad inventory would be left unsold. However, it presented a significant drawback. The sequential setup, where ad exchanges are ranked in priority according to their past performance, prevents them from competing with each other in real-time. As a result, publishers do not optimize revenues in circumstances where an exchange *lower* down the waterfall was willing to bid more for the particular ad impression, but never had the opportunity to do so due to its waterfall ranking.

Assume, for instance, that an ad impression is offered for sale to the ad exchange ranked first in the waterfall at a price of 5 € CPM. The ad exchange runs its own auction and submits a bid of 5.01 € CPM. The impression is sold to the first ad exchange. However, it is possible that an ad exchange lower down the waterfall was willing to submit for the particular ad impression a *higher* bid, e.g. 6.01 € CPM. Even so, it never gets to bid and compete in real-time with the exchange ranked first. The publisher thus misses an opportunity to gain an extra 1 € CPM.

The following graph illustrates the above example:



(Source: The Clearcode Blog)

Dynamic Allocation

In 2014, Google launched a feature in DFP called *dynamic allocation*,[91] which enabled AdX to act in a "dynamic" manner and disregard the waterfall. As described above, publishers using DFP would assign each ad exchange an *estimated* CPM price based on historical data, thus ranking ad exchanges in a waterfall, according to which they would be called to bid if an impression was available. However, after the introduction of dynamic allocation, when an ad impression was available, DFP would select the highest *estimated* CPM price of an ad exchange in the waterfall and then send that *estimated* price to Google's AdX. AdX would then run a real-time auction to see if it could offer a slightly higher price, e.g. 1 cent more.[92] If it could, then AdX would get to serve the ad.

[91] See https://support.google.com/admanager/answer/3721872?hl=en&ref_topic=7506292. With the later introduction of *enhanced* dynamic allocation, DFP gave AdX the additional ability to be "dynamic" and insert its real-time demand to outbid even directly sold ads, called guaranteed line items. See *supra* note 85.

[92] G. Sloane, "WTF is Dynamic Allocation?", *Digiday*, 14 April 2016, available at https://digiday.com/media/wtf-dynamic-allocation-google-ad-auctions/; noting that according to Alex Magnin, CRO of Thought Catalog, a new media publisher "Dynamic allocation allowed

Therefore, dynamic allocation granted AdX two distinct advantages over other ad exchanges:

(a) First, AdX could run a real-time auction for each ad impression, while other ad exchanges were "stuck" with their estimated prices, never getting the chance to submit a real-time bid (the "real-time-demand" advantage). That means that DFP sheltered AdX from real-time competition from other exchanges, which could thus allow AdX to buy impressions at artificially low prices.

(b) Second, AdX would use the highest estimated price of the ad exchange at the top of the waterfall as the price floor for its *own* auction. That means that in practice AdX could always beat any exchange in the waterfall, provided it could submit a slightly higher bid. AdX had always the "last look" on the ad impression, and that is the reason why industry commentators referred to this advantage as the "last-look" advantage.[93]

An industry commentator summarizes the concerns caused by dynamic allocation as follows:

> "Google made the display landscape less competitive by launching Dynamic Allocation in 2014, which enabled its exchange AdX to insert a real-time bid into DFP for every impression. Thus AdX could enter accurate pricing while other partners were stuck with their average tags, even though their bidders could potentially cite a higher price. Theoretically, Dynamic Allocation could enable AdX bidders to pay less for impressions than other partners would be willing to, therefore starving the publisher of revenue. This seemingly unfair setup spurred the adoption of header bidding." [94]

Conversely, if a publisher does not use DFP as its ad server, AdX has none of the above advantages and it will be simply assigned an *estimated* bid, which could be far lower

Google's exchange to cherry-pick the best ad impressions as they came through the Google-owned ad server, DFP"." See also P. Dinodia, "Everything You Need to Know About Dynamic Allocation", *adpushup_blog*, 17 November 2017, available at https://www.adpushup.com/blog/everything-you-need-to-know-about-dfp-dynamic-allocation/; S. Sluis, "The End Of Header Bidding? Google Opens Up Dynamic Allocation to Outside Demand", *AdExchanger,* 13 April 2016, available at https://adexchanger.com/platforms/the-end-of-header-bidding-google-opens-up-dynamic-allocation-to-outside-demand/

[93] S. Sluis, "Google Removes Its 'Last-Look' Auction Advantage", *AdExchanger*, 31 March 2017, available at https://adexchanger.com/platforms/google-removes-last-look-auction-advantage/

[94] G. Dunaway, "Rethinking the Ad Server", *AdMonsters*, 23 August 2016, available at https://www.admonsters.com/rethinking-ad-server/"

than the real-time bid AdX can produce, given its strength. Thus, publishers may face a catch 22, which helps explain their reluctance to switch to a competing ad server mentioned above:[95] either stick to DFP, where AdX does not face real-time competition from other exchanges, or switch to another server and lose AdX's real-time demand.

Header bidding

Publishers were thus concerned that they did not monetize their ad inventory to the full extent, since there could be other exchanges willing to bid more but not offered the chance to do so. In an effort to work around Google's AdX advantage in the waterfall setup, publishers turned to a mechanism called *header bidding*.[96]

Header bidding is just another form of auction. There are, however, key differences between header bidding and the third auction run by DFP.

- First, header bidding takes place *before* the user's browser asks DFP to serve the ad (hence it is also called a *pre-auction*).

- Second, the auction is run by the browser of the user, not DFP. It is the browser, not DFP, that acts as the auctioneer, inviting interested parties to bid for the ad impression. This type of header bidding is called "client-side" header bidding.

- Third, and most importantly, the browser invites demand partners (e.g. ad exchanges/SSPs) to submit bids for the ad impression *simultaneously* in a *unified* auction. There is no waterfall, i.e. demand partners are not prioritized.

Once the header bidding auction has revealed the winning bid, it is then sent to DFP (where it is matched with a remnant line item) where AdX may *still* offer a higher bid and win the impression within the context of dynamic allocation.

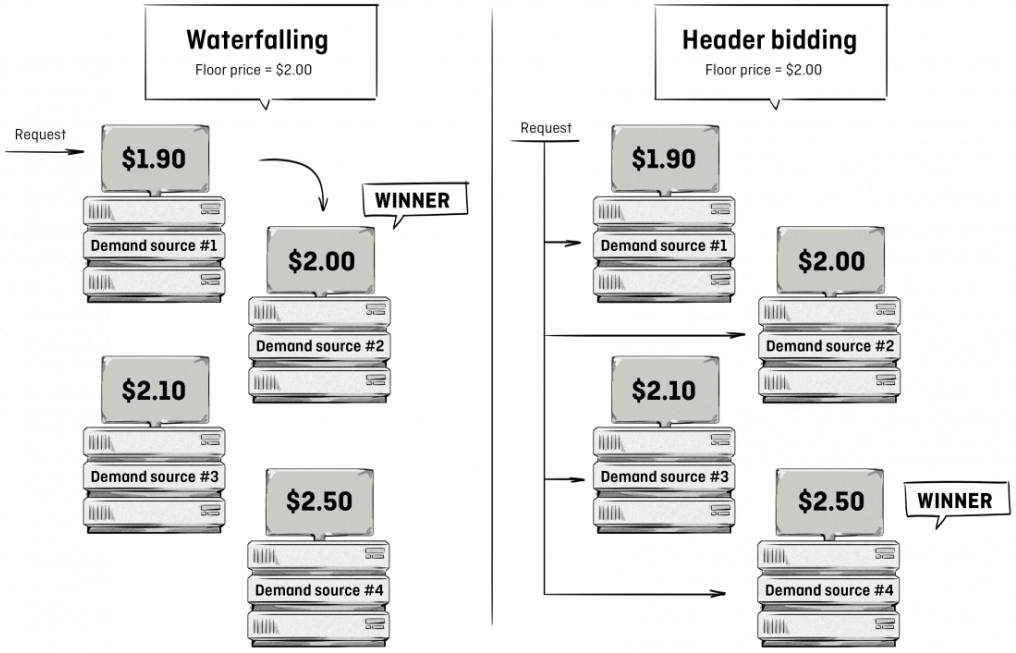
Although Ad Exchange still had the "last look" and could outbid the winning bid from the header bidding auction, header bidding nevertheless allowed publishers to have access to real-time demand from various ad exchanges and thus get an accurate insight

[95] See *supra* page 18.

[96] For an excellent description of header bidding, see Maciej Zawadziński, "What is Header Bidding and How Does it Work?", *The Clearcode Blog*, 2 August 2016, available at https://clearcode.cc/blog/what-is-header-bidding/; M. Zawadzinski, "What's the Difference Between Waterfall Auctions & Header Bidding?", *The Clearcode Blog,* 22 September 2016, available at https://clearcode.cc/blog/difference-waterfall-header-bidding/; Ratko Vidakovic, "The Beginner's Guide To Header Bidding", *AdProfs*, 30 March 2017, available at https://adprofs.co/beginners-guide-to-header-bidding/;

of their inventory's value.[97] AdX could no longer rely on the *estimated* bid from other exchanges (which could be much lower than the actual, real-time bid) to win the auction. Header bidding thus exposed AdX to some degree of competition from other exchanges in that it undermined AdX "real-time-advantage". Header bidding also presented benefits for buyers since they could bid for *every* ad impression – even premium inventory – and not only for the impression that had "cascaded" down the waterfall.[98]

The benefit of having demand partners competing simultaneously is illustrated in the following graph comparing header bidding with traditional waterfall setup.



(Source: The Clearcode Blog)

It is thus not surprising that publishers implementing header bidding saw a significant increase in their ad revenues, sometimes up to 60%,[99] encouraging its widespread adoption and the emergence of software solutions provided by various companies that help publishers organize their demand partners in header bidding (called

[97] Ibid.

[98] N. Maxwell, "Header Bidding: Not Just For Publishers' Benefit", *AdExchanger*, 29 April 2016, available at https://adexchanger.com/data-driven-thinking/header-bidding-not-just-for-publishers-benefit/

[99] Ibid.

"wrappers").[100] Google, on the other hand, was less enthusiastic about this development.[101] An AppNexus director for example stated that "*Google sees this [header bidding] as a massive threat to their dominance, and has no interest in having this adopted by the IAB [Interactive Advertising Bureau]*".[102]

A potential downside of header bidding, however, is that it may increase page latency, i.e. the webpage of the publisher may take longer to load. In order to address page latency, some publishers turned to *server-side* header bidding,[103] where the pre-auction takes place in a remote server instead of the user's browser. While page loading time is improved, publishers generate *lower* revenue, partly because for technical reasons, buyers have less information about the user and thus do not bid as high as they otherwise would.[104] Furthermore, because the auction takes place in a server owned by a third-party (e.g. Amazon), there is a lack of transparency.

Exchange Bidding

Exchange Bidding is Google's answer to header bidding,[105] announced as a feature of DFP in 2016 and made generally available for publishers in 2018.[106] Exchange Bidding allows publishers using DFP to connect third-party exchanges (so-called "yield partners") to Ad Exchange via a server-to-server connection.[107] Each time an ad

[100] S. Sluis, "The Year Header Bidding Went Mainstream", *AdExchanger*, 27 December 2016, available at https://adexchanger.com/publishers/year-header-bidding-went-mainstream/. One of the most popular wrappers used by publishers is the open-source Prebid, originally developed by AppNexus. See S. Sluis, "Header-Bidding Wrappers: Another Step Toward the End of the Waterfall", 2 February 2016, *AdExchanger,* available at https://adexchanger.com/ad-exchange-news/header-bidding-wrappers-another-step-toward-the-end-of-the-waterfall/

[101] S. Sluis, "AppNexus Strikes Back Against Google's Attempt To End Header Bidding", *AdExchanger*, 17 May 2016, available at https://adexchanger.com/ad-exchange-news/appnexus-strikes-back-against-googles-attempt-to-end-header-bidding/

[102] S. Sluis, "Header-Bidding Wrappers: Another Step Toward the End of the Waterfall", *supra* note 102.

[103] For an excellent overview of server-side header bidding, see S. Sluis, "Header Bidding Goes Server-Side: 6 Things You Should Know", *AdExchanger*, 11 January 2017, available at https://adexchanger.com/ad-exchange-news/header-bidding-goes-server-side-6-things-know/

[104] See *infra* p. 30.

[105] Commentators observe that Google introduced exchange bidding in order to "quash" header bidding. See for example S. Sluis, "AppNexus Strikes Back Against Google's Attempt To End Header Bidding", *supra* note 103.

[106] J. Hercher, "Google's Answer to Header Bidding Is Now Generally Available", *AdExchanger*, 4 April 2018, available at https://adexchanger.com/ad-exchange-news/google-exchange-bidding-update-elevates-its-header-bidding-solution-solution/

[107] See https://support.google.com/admanager/answer/7128453?hl=en&ref_topic=7512060

impression is available for sale, all competing exchanges submit their bids *simultaneously* in a *unified* auction hosted by DFP. This is the third auction that was described in our example above. Ad Exchange has no longer the "last look" advantage and faces real-time competition from these connected exchanges.[108] There is a caveat however: the removal of the last-look advantage concerns *only* the third-party exchanges that have accepted to integrate with AdX through the server-to-server connection. Thus, AdX retains its advantage for any ad exchange that does not participate in Exchange Bidding.

In effect, Exchange Bidding is just a form of *server-side* header bidding taking place on Google's servers, with the main difference being that it is easier to implement: the publisher simply enables the relevant option in DFP and does not need to obtain a wrapper.

Even though Exchange Bidding is arguably Google's effort to persuade publishers that there is no longer a need to use header bidding, commentators are concerned about the transparency of Google's solution, and express fears that Google could *still* favour its AdX in subtle ways. For instance, DFP may pass unique information to AdX regarding the audience that will be exposed to the ad, allowing it to solicit higher bids from advertisers than connected exchanges with "less" insight. [109] And in any event, AdX retains its advantage over exchanges refusing to participate in Exchange Bidding (e.g. out of distrust). Thus, publishers may still prefer to engage in *client-side* header bidding, which despite its latency problems, is transparent and promises high yields. What could be problematic, however, is *if* Google attempted to prevent publishers from engaging in client-side header bidding.

[108] S. Sluis, "Google Removes Its 'Last-Look-Auction Advantage" *supra* note 95.

[109] L. O'Reily, "Google is working on a lucrative new ad product, but some people who've seen it think it's a 'secret tax' and it 'requires us to lie'", Business Insider, 2 August 2016, available at http://uk.businessinsider.com/ad-tech-view-on-google-ebda-2016-7?r=US&IR=T; J. Hercher, "Google's Answer to Header Bidding Is Now Generally Available", *supra* note 108 (noting that according to an AppNexus's director, Exchange Bidding trades on the transparency offered by header-bidding integrations while keeping publishers "locked in the AdX black box"); S. Sluis, "Google Removes Its 'Last-Look- Auction Advantage, *supra* note 95 (noting that "Google will retain one additional advantage in the auction: It knows more about the user than it passes on to the other exchanges" and that "the shift to server-side solutions […] which make auctions run faster, also threaten to make the auctions lose transparency once again and replicate the last-look advantage"); B. LaRue, "Last Stand for Google's 'Last Look': What's Next?" *Admonsters*, 31 March 2017, available at https://www.admonsters.com/last-stand-googles-last-look-whats-next/ (noting that Exchange Bidding "still comes out looking something like a black box, unified auction or no").

Google's "Accelerated Mobile Pages" standard

It may not be entirely clear at the outset why a reference to the AMP standard, Google's open-source initiative for a standardized designing and coding for websites displayed on mobile devices, is relevant to the present discussion. After all, AMP was introduced with the aim of making websites load faster when accessed via mobile.[110] That is assumed to be the case because AMP-compliant websites are coded using a stripped-down form of HTML, that eschews certain features and functionality that could slow page load times.

However, several features of the AMP standard make it relevant to our analysis of display advertising. First, AMP is designed in such a way that it is incompatible with traditional header bidding, i.e. client-side header bidding.[111] Publishers of AMP-compliant websites may still engage in server-side header bidding, but it is doubtful whether the latter can be regarded as a substitute for client-side header bidding. The reason is that server-side header bidding is characterized by a lack of transparency. As an industry expert notes:

> "Server-side header bidding requires teamwork in a non-transparent environment […] what happens on the server is invisible to both the publisher and the buyers. It's possible that auctions could be conducted in a way where one demand partner gets preference or a final look. Or data could be leaked or hidden fees be taken."[112]

Moreover, cookie-matching is more complex and favours the vendor, i.e. the owner of the server-to-server connection. Complexities in cookie syncing translate into less user data being passed on to advertisers, which are thus less likely to submit a high bid. That in turn means less yield for publishers. As one industry observer notes "*[t]here will be more auctions in the future in which the DSP doesn't know what it's buying, and that will do bad things for yield*."[113]

Therefore, it seems that server-side header bidding might present the same problems which made client-side header bidding so popular among publishers, i.e. lack of

[110] Google, Inc., "Introducing the Accelerated Mobile Pages Project, for a faster, open mobile web", 7 October 2015, https://googleblog.blogspot.com/2015/10/introducing-accelerated-mobile-pages html

[111] M. Chowla, "How To Improve AMP Monetization With A Wrapper", 10 October 2018, available at https://pubmatic.com/blog/improve-amp-monetization/ noting that "[b]ecause of the nature of AMP, only server-to-server (S2S) bidding is feasible."

[112] S. Sluis, "Header Bidding Goes Server-Side: 6 Things You Should Know", *supra* note 105

[113] Ibid.

transparency and the related concern of self-preferencing (e.g. DFP as a "black box", the "last look" advantage granted to Ad Exchange), as well as lower monetization.

There is, however, an additional problem posed by the AMP standard, which is that it is making it harder for publishers to compete with Google in offering targeting services to advertisers. As has been noted, the rise of programmatic advertising resulted in advertisers valuing user data (and the targeting possibilities they unlock) more than ever. Some publishers with wide readerships, such as leading newspapers, have attempted to build their own unique proprietary datasets about their audience in order to offer targeting services directly to advertisers, eliminating the need to resort to intermediaries such as Google.[114] However, such efforts are significantly undermined in the case of AMP. When the user visits an AMP-compliant page, the content of the page is fetched *not* from the publisher's servers, but from Google's servers, where it has been "cached". The result is that Google collects large troves of data associated with the users' interactions with the publisher's website. Google shares such data with the publisher in a format that prevents cross-site matching, i.e. the publisher cannot match users visiting different websites which belong to the same publisher. Publishers are thus unable to gather the necessary data to create longitudinal user profiles they need to offer attractive targeting services.

Of course, Google could claim that publishers do not have to comply with the AMP standard. But, in reality, publishers, especially news content providers, *have to* be AMP compliant, as otherwise they would lose the Internet traffic generated by Google searches. The reason is that Google only allows AMP-compliant webpages (designated as such with a lightning bolt icon and an "AMP" label) to appear in its News Carousel.[115] Moreover, mobile web pages that do not comply with the AMP standard will figure lower on Google SERPs, since as of July 2018 page speed has become "*a*

[114] An example is The Ozone Project, where The Telegraph, The Guardian, News UK have developed a joint advertising platform (which Reach recently joined) to "give advertisers access to participating publishers through one specialised sales team who can use "sophisticated targeting" methods across the different websites involved." See https://www.pressgazette.co.uk/joint-advertising-platform-becomes-truly-cross-industry-initiative-as-reach-unites-with-news-uk-guardian-and-telegraph/

[115] S. Whang, "Google News is getting its own carousel of AMP stories, and other AMP features in the works", 20 April 2016, available at http://www.niemanlab.org/2016/04/google-news-is-getting-its-own-carousel-of-amp-stories-and-other-amp-features-in-the-works/ noting that "[t]he Google News headlines carousel will contain only AMP articles." The News Carousel is a box appearing at the top of Google's search results in mobile, that displays news articles relevant to the user's query. Users can swipe left or right to navigate through the articles in the without having to scroll down on the page to view search results.

major ranking factor for mobile searches."[116] Compliance with the AMP standard is thus effectively mandatory for publishers given the importance of Google search as a source of referrals. For instance, data suggests that more than half (53%) of all referral traffic that digital publishers receive comes from Google search.[117]

2. Possible anti-competitive conducts

In this part we discuss certain types of conduct that could give rise to anti-competitive concerns in the ad intermediation and ad serving sector.

Lack of transparency, hidden fees and exploitation

At first, we look at possible ways in which an intermediary could *exploit* publishers and/or advertisers in breach of Article 102 TFEU, provided of course that the intermediary is found to be dominant.

What prompts us to look into potential exploitative practices are the various concerns that the traditional actors, i.e. publishers and advertisers, have expressed regarding the opaqueness of the sector and the fees charged by the operators that intermediate between them.[118] Publishers and advertisers have limited visibility into the precise functioning of the display advertising ecosystem.[119] There are widespread concerns in the advertising and publishing industry regarding this lack of transparency and the so-

[116] A. Finn, "Here's How the Google Speed Update Will Impact Your Site (& Google Ads Account)", *The Wordstream Blog*, last updated on 26 October 2018, available at https://www.wordstream.com/blog/ws/2018/01/22/google-speed-update

[117] See https://www.parse.ly/resources/data-studies/referrer-dashboard/

[118] The CMO of P&G, one of the world's highest-spending advertisers, famously said in a 2017 IAB meeting that "we're all wasting way too much time and money on a media supply chain with poor standards adoption, too many players grading their own homework, too many hidden touches, and too many holes to allow criminals to rip us off […] We have a media supply chain that is murky at best and fraudulent at worst. […] We serve ads to consumers through a non-transparent media supply chain with spotty compliance to common standards, unreliable measurement, hidden rebates and new inventions like bot and methbot fraud". See L. Handley, "Procter & Gamble chief marketer slams 'crappy media supply chain', urges marketers to act", *CNBC*, 31 January 2017, available at https://www.cnbc.com/2017/01/31/procter-gamble-chief-marketer-slams-crappy-media-supply-chain.html

[119] See for example, J. Lee, "Has Programmatic Finally Hit Bottom?", *AdExchanger*, 29 July 2016, available at https://adexchanger.com/data-driven-thinking/programmatic-finally-hit-bottom/ (noting that "The advertiser isn't really clear on who actually saw the ad, where it was seen and who had to be paid along the way. There are many factors that contribute to this, including the poor quality of available inventory, open exchanges, fraud, nonviewable impressions and opaque daisy chain of technology").

called "ad tech tax", i.e. the fees applied by various middlemen between publishers and advertisers.[120]

For instance, IAB found in a 2014 report that ad tech companies cumulatively capture 55% of programmatic revenues, the remaining 45% going to publishers.[121] WARC has estimated that in 2017 the "ad tech tax" accounted for 55% of all programmatic spend, leaving *less* than 36% for publishers, if ad fraud is taken into account.[122] As noted above, The Guardian revealed in 2016 that in a worst case scenario ad tech intermediaries could extract up to 70% of programmatic revenues. The Guardian filed a lawsuit in 2017 against ad exchange Rubicon Project over alleged undisclosed buyer fees,[123] but the parties settled.[124] The Select Committee on Communications appointed by the House of Lords, noted in its 2018 Report that according to a U.S. study, publishers end up receiving only 29% of programmatic revenues.[125] At the same time, commentators observe that it is almost impossible to determine precisely the fees charged by ad exchanges,[126] while DSPs apparently charge hidden fees.[127] It is thus not surprising that transparency is the number one concern for marketers in 2018.[128]

Besides the fees that are charged by intermediaries at every corner of the ad tech stack, industry commentators have also identified a particular feature of programmatic advertising that *could* be used by intermediaries to engage in arbitrage and thus exploit

[120] See *supra* note 10.

[121] IAB Programmatic Revenue Report 2014 Results, July 2015, available at http://www.iab net/media/file/PwC_IAB_Programmatic_Study.pdf

[122] R. Benes, "Why Tech Firms Obtain Most of the Money in Programmatic Ad Buys", *eMarketer*, 16 April 2018, available at https://www.emarketer.com/content/why-tech-firms-obtain-most-of-the-money-in-programmatic-purchases

[123] L. O'Reilly, "The Guardian is suing ad tech company Rubicon Project", *Business Insider*, 28 March 2017 available at http://uk.businessinsider.com/guardian-takes-legal-action-against-rubicon-project-2017-3?r=US&IR=T

[124] L. O'Reilly, "The Guardian and Ad-Tech Vendor Rubicon Project Settle Legal Dispute", *The Wall Street Journal*, 12 October 2018, available at https://www.wsj.com/articles/the-guardian-and-ad-tech-vendor-rubicon-project-settle-legal-dispute-1539348209

[125] House of Lords, Select Committee on Communications, 1st Report of Session 2017-2019 "UK advertising in a digital age", 11 April 2018, p. 15

[126] S. Sluis, "Explainer: More On The Widespread Fee Practice Behind The Guardian's Lawsuit Vs. Rubicon Project", *AdExchanger*, 30 March 2017, available at https://adexchanger.com/ad-exchange-news/explainer-widespread-fee-practice-behind-guardians-lawsuit-vs-rubicon-project/

[127] S. Sluis, "Investigation: DSPs Charge Hidden Fees – And Many Can't Afford To Stop", *AdExchanger*, 10 January 2018, available at https://adexchanger.com/platforms/investigation-dsps-charge-hidden-fees-many-cant-afford-stop/

[128] J. Friedman, "Programmatic Faces A Turning Point In 2018", *AdExchanger*, 2 January 2018, available at https://adexchanger.com/data-driven-thinking/programmatic-faces-turning-point-2018/

publishers and advertisers, which is the existence of consecutive second-price auctions.[129] The issue might at first glance seem irrelevant from a competition law perspective. However, if a *dominant* company were found to engage in such a practice, it could be considered as a form of exploitation in breach of Article 102(a) TFEU. In any event, it is worth exploring how there could be any arbitrage from the existence of consecutive auctions.

In a 2017 Digiday article, an industry expert observes that:

> "For example, a DSP will tell a buyer that the exchange it is buying from uses first-price. The buyer is now under the impression that the bidding price will be the same as the price that wins the impression. In reality, the exchange uses second-price. The money in the middle – the difference between the cost of the impression and the buyer's bid – gets split between the programmatic platforms involved in the transaction. Hello, extra margin."[130]

The same expert gives in another article an example of how this "extra margin" could be created:

> "[I]f a buyer bids $10 in a DSP's internal auction and the second-lowest bid is $9, then the buyer will win the internal auction at $9.01. But if the second-highest bid in the open exchange is only $5, then the clearing price on the exchange will be $5.01. Rather than report back the $5.01 that the DSP bought the impression for, the DSP will report $9.01 back to the buyer and pocket the $4 in the middle, unbeknownst to most ad buyers, according to the DSP exec."[131]

Prima facie, Google appears to have the *ability* and *incentive* to engage in such a practice as illustrated by a hypothetical example, where an advertiser buys an ad impression through Google's AdWords, in line with the example analyzed above.[132] In this setting, Google should be able to engage in arbitrage, given that both the first

[129] I. Ivanov, "There are no losers when it comes to first-price auctions", *Digitaldougnut*, 13 June 2018, available at https://www.digitaldoughnut.com/articles/2018/june/there-are-no-losers-at-first-price-auctions; M. Zawadzinski, "Waterfalling, Header Bidding and New Auction Dynamics", *The Clearcode Blog*, available at https://clearcode.cc/blog/sequential-auctions-header-bidding-first-price-second-price-auctions/

[130] R. Benes, "In programmatic, buyers sometimes don't know what type of auction they're bidding in", *Digiday*, 30 June 2017, available at https://digiday.com/marketing/ad-buyers-programmatic-auction/

[131] R. Benes, "Ad buyer, beware: How DSPs sometimes play fast and loose", *Digiday*, 25 March 2017, available at https://digiday.com/marketing/dsp-squeeze-buyers/.

[132] See *supra* pages 19-20.

auction (within AdWords) and the second auction (within AdX) are second-price auctions.

Assume, for instance, that there are three advertisers in the AdWords auction: Advertiser 1 bids 10 € CPM, Advertiser 2 bids 12 € CPM (winner), and Advertiser 3 bids 11 € CPM.[133] Since the AdWords auction is second-price, the winning Advertiser 2 will be charged 11.01 € CPM. According to Google's support manager website, *"if Google Ads [AdWords] wins the auction, the advertiser(s) in the winning ad unit will pay no more than what is required to rank higher than the next advertiser, on a CPC basis, when a user clicks on the ad or completes another valid event in connection with the ad.*"[134] However, that is not necessarily the amount of money that the publisher will receive.

The reason is that there is an additional second-price auction, organized by AdX, where other DSPs/ad networks compete with AdWords. For example, DSP 1 bids 7 € CPM, DSP 2 bids 5 € CPM, and AdWords bids 11.01 € CPM (winner). As the Ad Exchange auction is again *second-price,* the publisher will be paid slightly above the second highest bid, i.e. 7.01 € CPM.[135] In Google's support manager website, it is stated that *"[t]he publisher will be paid the highest of the second highest bid value in the Ad Exchange auction or the minimum CPM."*[136] That would allow the intermediary, in this case Google, to extract the difference between what the advertiser was charged and what the publisher receives at the end of the chain. Although such a practice could only be proved by analyzing bidding data, it may be one of the reasons why publishers only capture a fraction of the prices paid by advertisers to purchase their ad inventory.

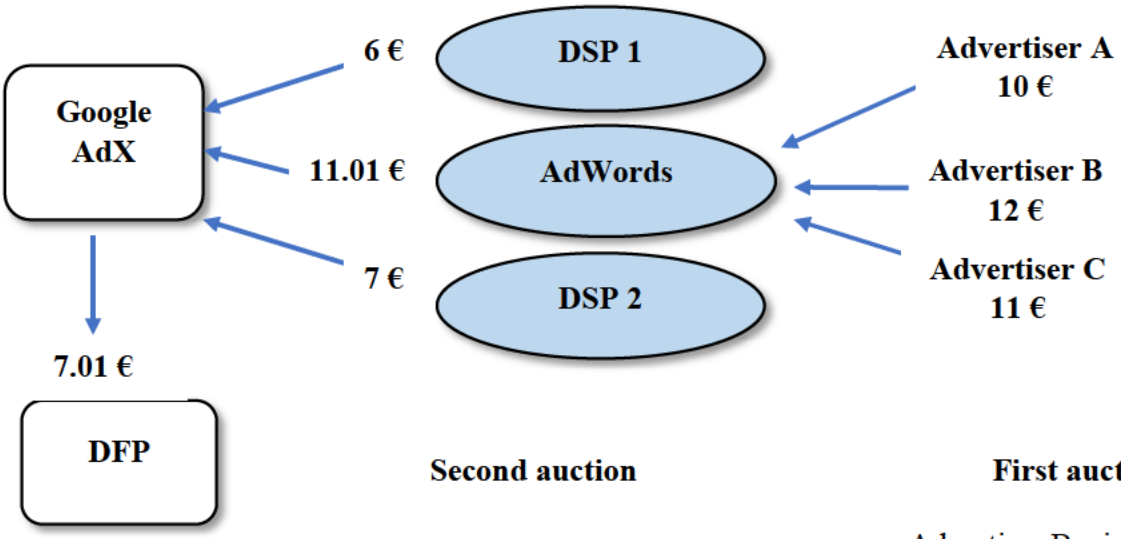
[133] To be more precise, advertisers bid on a CPC basis. However, Google pays publishers on a CPM basis. In order to compare what is being paid to the publisher with what is being received by the advertiser, we express all bids on a CPM basis. In practice, there is a formula which can be used to translate the CPC price to a CPM price.

[134] https://support.google.com/google-ads/answer/2472739?hl=en

[135] Another hypothesis is that AdWords could place a *lower* bid in AdX, not corresponding to the amount charged to the advertiser. This does not seem necessary, since the price paid to the publisher will be the same, regardless of the bid submitted by AdWords, given that the auction is second-price. However, such a practice could perhaps be useful in creating additional opacity and making it harder for publishers to find out the price charged to the advertiser.

[136] https://support.google.com/google-ads/answer/2472739?hl=en

The following graph illustrates how arbitrage can arise in the context of successive second-price auctions:



The risk of exploitation would of course be less likely to arise if the ad tech market was competitive. In a competitive market, Google would be dissuaded from engaging in any form of exploitative conduct, as publishers and/or advertisers could discipline AdX by not trading through it. Moreover, intense competition between AdWords and competing ad networks/DSPs within the auction organized by AdX would cut down the margin available for arbitrage. The example above illustrates that the opportunity for arbitrage is greater when the first auction yields a relatively high bid[137] *and* the second-highest bid in the second auction is materially lower.[138]

[137] That does not seem to be a problem, given AdWords' prominence as an ad network. It is also possible that Google takes advantage of its prominence on *search* advertising and uses a form of "status quo bias" to artificially create more competition among advertisers on *display* advertising, thus leading to higher prices. AdWords is also the "gateway" for search advertising on Google's SERPs. However, an advertiser bidding for a campaign in AdWords is by default (and unless she opts out) bidding for both search ads in Google's SERPs and for display ads in the Google Display Network. That drives up demand for Google Display Network, even if the advertiser does not realize it. See D. Pratt, "7 Default Settings in AdWords that lower your ROI", *AdHawk*, 18 June 2018, available at https://blog.tryadhawk.com/google-adwords/4-default-settings-in-adwords-that-lower-your-roi/.

[138] Again, that could be the case because e.g. AdWords has more data about the user compared to other ad networks/DSPs. According to Google, when AdWords is used to buy inventory on Ad Exchange, there is minimal cookie matching loss from Ad Exchange to AdWords, to the effect that "there is a

However, despite the continuing growth in online ad spend, the ad tech landscape is experiencing a consolidation phase, whereby independent ad tech firms struggle, venture capital investments is falling sharply, threatening to stall innovation, while Google and Facebook "*solidif[y] their grip on digital dollars, slowing down revenues for others*."[139]

Vertical foreclosure / Self-preferencing

As illustrated by the *Google Shopping* decision of the Commission, competition problems may arise when a firm that owns a dominant platform (Google Search) competes on a downstream market (comparison shopping services) with other firms that need to have access to the dominant platform to provide their services.[140] In that decision, the Commission found that Google abused its dominant position by systematically giving prominent placement to its own comparison-shopping service in its search results, while demoting rival comparison shopping services in these results. The abusive conduct identified by the Commission has been labelled as "self-preferencing" in that Google used its dominant platform to give a competitive advantage to its comparison-shopping services over rival services.

A related concern seems to have led the Commission and the German Competition Authority to recently launch a preliminary investigation of Amazon's e-commerce

higher likelihood [AdWords will] find impressions that meet [the] targeting criteria [of advertisers], creating greater auction pressure and demand for the publisher's inventory." See https://support.google.com/admanager/answer/7014770?hl=en. Moreover, it has been suggested that competition in the auction organized by AdX is much weaker than one would assume: see C. Cummings, "Google's Busted Auctions", *PubNation Blog*, 22 June 2016, available at https://www.pubnation.com/blog/googles-busted-auctions (noting that on average there were only *six* bids per impression on Ad Exchange and that the gap between the winning bid and the second-highest bid could be "enormous", up to 70% off the winning bid).

[139] C. Ballentine, "Google-Facebook Dominance Hurts Ad Tech Firms, Speeding Consolidation", *The New York Times*, 12 August 2018, available at https://www nytimes.com/2018/08/12/technology/google-facebook-dominance-hurts-ad-tech-firms-speeding-consolidation.html See also C. Ballentine, "Investment in Ad Tech Grows Increasingly Scarce, With Forrester Predicting a 75% Drop in Venture Capital", *Adweek*, 7 November 2018, available at https://www.adweek.com/programmatic/investment-in-ad-tech-grows-increasingly-scarce-with-forrester-predicting-a-75-drop-in-venture-capital/ noting that "[p]art of the concern among investors is the consolidation of ad spend on platforms such as Facebook and Google. Jay Friedman, president of Goodway Group, explained to Adweek that the historic opaque business models of many ad-tech companies have prompted media buyers to be more prudent."

[140] Press Release, "Antitrust: Commission fines Google €2.42 billion for abusing dominance as search engine by giving illegal advantage to own comparison shopping service ", IP/17/1784, 27 June 2017.

platform.[141] While little is known about that investigation, it seems to be focused on Amazon's dual role as a competitor, but also host, to third-party merchants, which sell goods on Amazon's websites. Because of this dual role Amazon has access to valuable data on the availability, prices, return rates and popularity of competitors' products, which it could potentially use to stimulate its own retail activities at the expense of third-party sellers on its marketplace.

The fact that Google is, as we have seen above, both the organizer of the (final) auction (in DFP) *and* participating in the auction (in the form of AdX) gives rise to similar kinds of concerns as those identified in the *Google Shopping* decision and the *Amazon* preliminary investigation. This problem is not new. Already in the context of the *Google / DoubleClick* merger in 2008, stakeholders had expressed concerns that Google could use DFP to favour its own intermediation services, e.g. by tweaking the auction mechanism in favour of AdSense, Google's ad network, thus depriving competing ad networks and exchanges from the critical scale and liquidity they need to be sustainable.[142] At the time, the Commission rejected these arguments, repeating that Google would have the incentive to act neutrally vis-à-vis competing intermediaries, as a lack of neutrality could cause customers switching. The problem is that in the meantime Google has largely monopolized the ad tech value chain, and that the type of constraints identified by the Commission in 2008 no longer exist.

Earlier manifestations of Google's self-preferencing were the "real-time-demand" advantage and the so-called "last-look" advantage DFP granted to AdX discussed in sub-section 1 above. DFP would grant exclusively to AdX the possibility to take real-time demand into account, hence distorting competition between exchanges to the detriment of publishers. This form of self-preferencing happens even after the introduction of Exchange Bidding, as regards exchanges that have *not* connected to AdX.

In addition to this problem, concerns have been expressed that Google might use the information gathered by DFP to favour AdX. As expressed by an industry observer:

> "Google relied on the informational advantage (DFP + AdX integration) to 'cherry-pick' inventory in mysterious, but decidedly underhanded ways.

[141] R. Toplensky and S. Shannon Bond, EU opens probe into Amazon use of data about merchants, Financial Times, 19 September 2018, available at https://www.ft.com/content/a8c78888-bc0f-11e8-8274-55b72926558f; R. Toplensky, "German cartel office launches investigation into Amazon marketplace", Financial Times, 29 November 2018, available at https://www ft.com/content/ed2d1980-f3ef-11e8-ae55-df4bf40f9d0d

[142] Decision of 11 March 2008, COMP/M.4731, Google/DoubleClick, par. 290

> According to an ad tech executive who wished to remain anonymous, 'AdX always won the impression if the user happened to be at the end-of-funnel stage in a purchase journey, essentially stealing attributions from other exchanges. On paper, it went on to show advertisers that DBM (DoubleClick Bid Manager) with AdX inventory gave them better results than any other platforms.'"[143]

These observations remain relevant even after the introduction of Exchange Bidding. The reality is that DFP possesses vast amounts of historical data regarding the bids submitted for particular impressions by competing ad exchanges and the price at which the impression is finally sold, since there could be millions of impressions being sold every day and DFP is admittedly by far the most popular ad server solution. The informational advantage could thus be still present, and it is not possible to monitor whether AdX may use such historical data amassed by DFP to calculate the appropriate bid to win the auction.

Commentators have also taken issue with the fact that Exchange Bidding lacks transparency, a reason why competing ad exchanges are reluctant to participate in Exchange Bidding. An author notes that:

> "Demand partners often take pause at jumping into an S2S connection [server-to-server] managed by someone else, especially when that "someone else" is a competitor. In managing the server-side connection, Google ultimately decides what data goes into EBDA [Exchange Bidding]. There are issues in S2S related to ID-syncing between buy and sell sides, and from publisher to publisher. Google might find an advantage for itself in those ID issues, not just because it's managing the server-side connection, but because of its unparalleled scale. So, EBDA still comes out looking something like a black box, unified auction or no."[144]

Interestingly, Google has abandoned any attempt to give the impression that DFP might deal with AdX on an arm's length basis when it announced, in July 2018, the integration of AdX and DFP into Google Ad Manager, offering a "truly unified platform".[145] This led an industry commentator to observe that:

> "my guess is that the top goal is to try and wean publishers off of header integrations and get them hooked on EBDA demand. It seems funny to me that there's no longer even a pretense of separation between ad server and SSP/exchange. The name change re-emphasizes that Google will leverage its

[143] P. Dinodia, "Everything You Need To Know About DFP Dynamic Allocation", *supra* note 94.

[144] B. LaRue, "Last Stand for Google's 'Last Look': What's Next?", *supra* note 111.

[145] "Introducing Google Ad Manager", available at https://www.blog.google/products/admanager/introducing-google-ad-manager/

> near-monopolistic control of the publisher ad server market to shoo away other demand sources—whether or not that's good for the publisher or the advertiser. […] It's another attempt to squeeze out competition and keep publishers (and advertisers) sucking at the Google teat."[146]

In our view, Google's conduct falls neatly into the vertical foreclosure category of abuse of a dominant position identified by the Commission in its *Google Shopping* decision, but also in earlier decisions. The abuse here is that Google uses its dominant position in the ad server market with the vast majority of publishers locked in DFP to distort competition between different ad exchanges to the benefit of its own exchange. This weakens competition in the ad exchanges market to the detriment of publishers.

Vertical foreclosure / coercion

As discussed above, in reaction to DFP's dynamic allocation and in order to stimulate true competition between ad exchanges, publishers resorted to header bidding, which exposed AdX to real-time competition from connected exchanges. Google responded to header bidding by launching Exchange Bidding, which allows all connected exchanges to compete in a unified auction hosted by DFP. However, it also seems that Google undermined header bidding through the development of AMP. The reason is that, as noted above, client-side header bidding is not possible in AMP-compliant websites for technical reasons. Moreover, by requiring that all AMP pages are loaded on its servers, Google does not only allow itself to collect all the data associated with the users' interactions with publisher, but it also makes it harder for these publishers to obtain access to this data by restricting access to it.

In our view, Google's strategy with AMP amounts to another form of vertical foreclosure, whereby Google leverages its dominance in general search to coerce publishers to adopt a conduct (making their mobile pages compliant to the AMP standard), which – while it benefits Google – is fundamentally at odds with their interest.

Google's strategy is not unlike the conduct at stake in the *Android* decision where the Commission considered that Google had illegally tied its Search and browser (Chrome) apps to its app store (the Play Store), thus effectively coercing Android device makers to preload the Search and Chrome apps on their devices.[147] In that case, while Android

[146] G. Dunaway, "Death of DoubleClick, Birth of a Monster?", *Admonsters*, 3 July 2018, available at https://www.admonsters.com/death-doubleclick-google-ad-manager/

[147] Press release, "Antitrust: Commission fines Google €4.34 billion for illegal practices regarding Android mobile devices to strengthen dominance of Google's search engine", 18 July 2018.

device makers were theoretically not bound to preload Google's suite of applications to develop an Android device, a refusal to do so would have made these devices commercially unsalable as they would have been deprived of the Play Store, which is a "must have" for all Android users.[148] In its decision, the Commission found that Google's conduct breached Article 102 TFEU and condemned Google to a significant fine.

Similarly, in the present case, while publishers do not have to comply with the AMP standard, they have no choice but to be AMP-compliant despite the fact it undermines header-bidding and harms their ability to collect the type of data that would allow them to bypass the Google's tech stack and sell targeted audiences directly to advertisers. In our view, this conduct could breach Article 102 TFEU.

IV. Conclusions

Online display advertising is a sector of critical importance to both advertisers and publishers. But for their display advertising revenues, even the world's leading newspapers would not be commercially viable. While online display advertising was originally not very different from its offline equivalent as most inventory was sold through bilateral negotiations between publishers and advertisers, the rise of programmatic advertising has had profound implications on the industry. Programmatic advertising has been a source of opportunities for advertisers and publishers, but the fees charged by intermediaries are opaque, hence amounting to what is perceived as ad tech tax. While ad tech markets are populated by a variety of actors, Google appears to hold a dominant on several such markets, and several of its conducts raise exploitative and exclusionary concerns potentially in breach of Article 102 TFEU.

The French and German competition authorities are looking closely at the online display advertising sector and, given their investigative powers, they should be able to collect the data, including bidding data, required to further explore the competition issues existing in the sector. Other national competition authorities may follow suit under the pressure brought by advertisers and publishers. If multiple investigations are initiated at the Member State level, it may be ultimately desirable for the European Commission to intervene to prevent the adoption of incompatible decisions and remedies.

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[148] See B. Edelman & D. Geradin, " Android and Competition Law: Exploring and Assessing Google's Practices in Mobile", 24 October 2016, *European Competition Journal* 12 (2016), 159-194, available at SSRN: https://ssrn.com/abstract=2833476

Annex
Explaining step-by-step the programmatic delivery of ads with DFP

(1) The user types in its browser the URL of the publisher webpage (e.g. the webpage of the Wall Street Journal). In our example we assume that the user is John, lives in France, is 30 years old and is interested in cars.

(2) The browser calls the content server of the publisher webpage. The content server sends the content of the webpage, which has a pre-defined empty space to be filled with an ad. The web server "tells" the browser to call DFP for the ad that will fill the available space.

(3) In case the publisher has resorted to header bidding, a pre-auction will take place *before* the page starts to load and *before* DFP is called by the browser. In *client-side* header bidding, the browser contacts directly all the demand partners (ad exchanges/SSPs) the publisher has configured and runs a simultaneous auction. In *server-side* header bidding, the browser contacts only one demand partner, which in turn contacts the other demand partners and runs the auction on its server. In both cases, the winning bid will be sent by the browser to DFP where it will be matched with a remnant line item.

(4) The browser contacts DFP sending an **ad tag**. An ad tag is a snippet of code (usually HTML) contained in the publisher webpage that contains information about the ad space that is up for sale and the user that will be exposed to the ad.

(5) DFP examines the received information and finds the line items which are compatible.

(6) DFP ranks line items according to certain criteria. Guaranteed line items rank ahead of remnant line items.[149] DFP selects the highest-ranking *guaranteed* line item and the highest-ranking *remnant* line item (which could be the winning bid from header bidding, if such pre-auction has taken place).

(7) DFP assigns the guaranteed line item a price (called "**temporary CPM**") that does not necessarily coincide with the actual CPM of the line item. That process opens the guaranteed line item to competition from AdX bids, in order to

[149] Guaranteed line items are *reserved* i.e. they have been reserved to a particular advertiser in the context of a *direct sale*, whereby the publisher has guaranteed their delivery within a time period or until a certain level of impressions has been reached. On the contrary, remnant line items are line items whose delivery has not been guaranteed by the publisher.

maximize publisher revenues.[150] The reason that DFP assign a temporary CPM is to ensure that the delivery of the guaranteed line items agreed between the publisher and the advertiser will not be compromised. DFP assigns a temporary CPM that reflects the progress of guaranteed line item's delivery: if the guaranteed line item is behind schedule, a higher temporary CPM is assigned to boost its possibility of winning and being delivered. If the guaranteed line item is close to reaching its delivery goal, the temporary CPM assigned will be lower.

(8) DFP sends bid request (along with information derived from the ad tag) to AdX to solicit bid responses that will compete with the guaranteed line item and the remnant line item selected. The higher of the temporary CPM of the top guaranteed line item and of the CPM of the top remnant line item is set as a price floor on the auction run by AdX. AdX has thus "last look", i.e. it can beat any line item if it solicits a slightly higher bid.

(9) If the publisher has enabled Exchange Bidding, the publisher may connect AdX with third-party ad exchanges (called "yield partners") that will compete with AdX in a unified auction. In such a case, Google's AdX sends the bid request to competing ad exchanges through a "server-to-server" connection. AdX has no "last-look" advantage vis-à-vis these connected third party exchanges, but keeps it vis-à-vis other exchanges.

(10) Google's own AdX and third-party ad exchanges run auctions to determine the bid each of them will submit for the particular ad impression.

(11) This procedure in fact includes multiple auctions. For example, AdX is connected to several DSPs and ad networks, including AdWords. Each DSP/ad network will run its own auction to determine the bid it will submit to the auction organized by AdX. The data regarding the ad slot and the user help DSPs gauge how much they are willing to bid. For instance, a DSP that manages the campaign of a car manufacturer targeting young men living in France will decide to bid higher. Once DSPs have submitted their bids, AdX runs a second-price auction and selects the DSP with the highest bid. Since the auction is second-price, the winning bidder will pay not what it actually bids, but just slightly more (e.g. 1 cent) than the second highest bidder. For example, DSP1 bids 2.10 € CPM, DSP2 bids 2.50 € CPM and DSP3 bids 1.90 € CPM. The winning bidder, i.e. DSP2 will in fact pay 2.11 € CPM, not 2.50 € CPM.

[150] For instance, it is possible that in a particular case an advertiser is interested in displaying its ad to the targeted individual, so that he is willing to pay more than what the advertiser of the guaranteed line item has agreed to pay.

(12) Once AdX and the competing ad exchanges have run their own auctions, each of them submits its highest bid. In our example, AdX will submit a bid for 2.11 € CPM.

(13) DFP then hosts a unified auction, where the bids from competing ad exchanges and AdX compete with the higher of the CPM of the top remnant line item and the temporary CPM of the top guaranteed line item. The highest bidder wins and gets to serve the ad.

(14) Once the highest bidder is determined, DFP contacts the browser and tells it to fetch the creative content that will fill the ad space from the ad server of the advertiser that won.

(15) The browser calls the ad server of the winning advertiser and serves the creative content on the webpage of the publisher.

Competition policy for digital markets: An economic perspective

14 December 2018

Robert Hahn*

A response to the call for evidence on competition in the digital economy

the behaviouralist

* I have done work for several companies in the information technology space outside of the UK, and have also provided advice to governments. In the UK, I have worked for British Telecom, which is funding this effort. I would like to thank Jesper Akesson, Sam Ashworth-Hayes and Jay Chakravarti for helping with this submission. The views in this submission reflect my own, independent assessment, and do not necessarily reflect the views of the institutions with which I am affiliated.

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Competition policy for digital markets: An economic perspective

Robert Hahn

1. Introduction

I have been asked by British Telecom (BT) to provide input into the review of the state of competition in the digital economy. My submission primarily covers questions 7 and 10 in the call for evidence.[1]

I am a visiting professor, and former director of economics, at Oxford University's Smith School of Enterprise and the Environment. I have also served on the faculty of Harvard University, and directed the AEI-Brookings Joint Center for Regulatory Studies. My research has covered a number of issues in competition policy. I include a bio in Appendix A and a Curriculum vitae in Appendix B.

I will argue for a regulatory environment that places greater weight on dynamic efficiency than on static efficiency. Static efficiency refers to the state of affairs that maximises current economic welfare; dynamic efficiency refers to the path of states over time that maximises long-run economic welfare. Dynamic efficiency is a particularly relevant welfare concept in digital markets, as they are subject to significant change over time.

In this spirit, I will argue that regulators should generally take an ex-post approach to regulation, acting once market failures are clearly identified and defined, rather than acting before the fact (ex-ante).

My submission is organised into four parts. Section 2 discusses the appropriate goal for competition policy and identifies some key constraints. Section 3 explores different frameworks for thinking about the digital economy. Section 4 outlines some initial lessons for competition policy in this space. Finally, Section 5 concludes.

2. Objectives and constraints

I am interested in providing some important lessons for competition policy in the digital economy. Before doing so in Section 3, it is useful to define the goal of competition policy, and identify key constraints faced by regulators.

The primary goal of competition policy should be to promote long-term economic efficiency (Heyer, 2006). That means maximising the sum of producer and consumer surplus over time, appropriately discounted (Carlton and Perloff, 2005). The key phrase here is 'long-term'. Practically speaking, it means giving careful consideration

1 These questions are: "What tools does competition policy need to deal with issues in the digital economy in a sufficiently timely, effective and far-sighted manner?; To what extent are these in place in the UK?"; and "Are there other issues you consider that the review should be considering, given its focus on competition in the digital economy?".

to the incentives that competition policy provides for investment and innovation.

An important constraint upon the ability of regulators to achieve long-term efficiency in digital markets is that economists do not understand them very well. While we have stylised models of 'equilibrium' behaviour that provide some important insights for how certain kinds of digital markets may operate (see, e.g., Rochet and Tirole, 2003), we lack a solid theoretical understanding of the dynamics of digital competition (Smith, 2007). This is concerning, as it could be argued that at least some, and perhaps much, behaviour that we observe in digital markets does not take place at an economic equilibrium.

Because these markets are fast-moving and poorly understood, regulators should recognise the temporal limitations of competition policy (Hahn, 2001). Government does not run on internet time. By the time regulations are put in place, the original problem may well have been resolved within the market, or considerable progress in that direction may have been made.

A classic example concerns the AOL-Time Warner merger, where American authorities feared that AOL's instant messaging service could become so dominant that no other party could compete with it (Crandall, 2018). In the end, no intervention was made, and other messaging services emerged.

Furthermore, the speed of movement within digital markets can leave both regulatory decisions and legislation looking out of date. Distinctions between long-distance and local calls, for instance, have been rendered largely meaningless by the development of Voice over IP. Regulatory action should be reserved for cases when a dynamic analysis illustrates that problems are likely to be both longstanding and unlikely to resolve themselves.

To summarise, digital markets are dynamic and move quickly. This means that regulation often lags changes in the market, and that static models of competition are insufficient. Attempting to achieve the best outcome in a static framework could impose significant costs in the long term, as these actions will not consider the incentives for investment and innovation that drive long-term growth.

These market characteristics suggest that a suitable philosophy of regulation might be "first, do no harm". When a market is poorly understood, even the best-intentioned regulation can have negative effects. Until there is compelling evidence and understanding that suggests a course of action, regulators would be best advised to monitor the situation. When an intervention is made, it should be as narrowly defined as possible. Regulators should treat the diagnosed problem with the minimum intervention needed for success.

This does not mean that there is no role for intervening in, or regulating, the competitive aspects of the digital economy. Instead, it means acknowledging the limitations on our knowledge and ability. With this in mind, I would like to present some rules of thumb for thinking about competition policy in the digital economy.

3. How to think about the digital economy[2]

For the purposes of this paper, one can think of the digital economy as encompassing large technology firms, such as Google and Amazon, and smaller firms that are part of the Internet ecosystem. Before making recommendations on how to regulate these markets, I will briefly list some important considerations when analysing the behaviour of these firms.

While some digital markets resemble conventional ones, many others display a more complicated structure, such as firms providing platforms that bring together buyers and sellers. A number of features differentiate digital markets that are particularly relevant to our analysis.

- **Economies of scale in production:** Average costs often fall as output increases. In software, for example, it typically costs millions to produce the first unit of the finished product, but negligible amounts for additional units.

- **Complementarities across products:** The value of a product increases as other products related to its use are developed. For example, as software applications are written for a computer operating system, the operating system becomes more valuable to consumers.

- **Network effects:** Adding another person to a telephone, email or social media network makes the network more valuable to other users in the absence of significant congestion effects. Similarly, the value of many software products increases with the number of users who can open the files they produce.

- **The pace of change:** Software markets can change dramatically over short periods. A relatively short time ago, AOL Instant Messenger and MySpace were considered to be market leaders. New products emerge continually, adding competition to existing markets and creating new ones.

Because of the features of supply and demand in some digital markets, there is not always a clear competitive benchmark against which to judge the exercise of market power. Indeed, the way to price in these markets is not always clear. Companies often need to charge above marginal cost to recoup their investments, and the difference between price and marginal cost is often not a good measure of market power.

Rochet and Tirole (2003), in a seminal paper, present a useful way of thinking about some of these digital markets. They frame their analysis in terms of two-sided markets, which involve two sets of agents interacting on a platform. In this framework, decisions by one set of agents directly affect the welfare of the other set of agents, often as a result of an externality (Rysman, 2009).

In this setting, pricing is more complicated than in traditional ‘one-sided’ markets. To

[2] This section draws from Hahn (2001) and from ongoing work I am undertaking with Scott Wallsten.

quote Rysman (2009, p. 129):

In a one-sided market, we can characterise the price–cost mark-up in terms of elasticity of demand and the marginal cost. But in a two-sided market, pricing decisions will also include the elasticity of the response on the other side and the mark-up charged to the other side.

For an intuitive example from the non-digital world, we can consider the behaviour of bars. It is not uncommon for bars to run promotions offering discounts to female patrons. This pricing structure is the result of a two-sided market where two sets of agents (men and women) can be viewed as benefitting from each other's presence to different degrees. To attract an appropriate mixture of both, pricing may need to be different for the two sexes.

In the digital world, there are many examples. Facebook, for example, does not charge everyday users, but does charge advertisers. Google does the same for search. Amazon and eBay do not charge buyers explicitly for the right to use basic features of their platforms, but sellers are charged.

This two-sided structure makes decisions on competition policy more complicated when we consider attaining static efficiency. The structure of these markets also makes decisions more difficult for matters of dynamic efficiency.

The changing nature of competition in the digital economy can also make it challenging to define the relevant market for competition policy. Firms can enter new markets at startling speed. Historical market shares can be misleading, while changes in technology are constantly redefining which products can be substituted for which others. When considering the need for ex ante or ex post interventions in a market, regulators should take into account real-world patterns of substitution, and the distortions that can occur by differential regulatory treatment of closely-related products.

Another way in which many companies in the digital market differ from more 'traditional' firms is their heavy reliance on "big data". The use of this data is often opaque to the end user, and consumers may not understand the true 'cost' of using platforms, such as Facebook. Firms may be able to compete on this dimension, and increase the attractiveness of their services by being more transparent about how they process data. In addition, we may see the gradual introduction of markets that pay customers for having access to certain kinds of data.

One related issue is the extent to which firms should be required to share their data. In thinking about regulating this issue, regulators need to take into account a range of benefits and costs. If, for example, firms are required to share data sets that they have invested in developing, this could diminish their incentive to develop them in the first place. At the same time, it may be desirable for consumers to be allowed to exercise greater control over how and where their data are used.

It is in the nature of some of these markets that only a few players may be viable, or

in the extreme, only one. The rise of winner-take-most markets makes it harder to identify illegitimate monopoly power and predatory conduct. If competition in some parts of the digital economy yields one or two industry giants, it is hard to say whether the battle was fair and foul. The existence of large profits and market shares can also be viewed as an incentive for firms to provide better services. Firms might compete to 'capture' the market, and then continue to innovate to fend off potential competitors.

Regulators should be aware that by providing a fix to the static competitive effects of an undesirable activity, they are reducing the profits available to a firm willing to provide a market alternative by introducing a service or product that undercuts the incumbent firm. This is not to say that regulators should not take action; it is simply to note that there is a trade-off.

Regulators should also be aware that digital markets have the capacity to affect the level of competition within other markets in dramatic ways. Amazon, for example, continues to exert competitive pressure on "big-box" retailers; in addition, many bookstores have found they could not compete with Internet sales. These are just two examples of a broader trend in favour of ecommerce, which has changed the way consumers search for and buy goods and services.

Note that entry and competition in these markets does not always require that the digital firm provide a product of the same sort. It can instead offer a close substitute. For example, WhatsApp, Facebook Messenger, and iMessage substitute for texts; Skype for phone calls; and Netflix for video stores (Wadhwa, 2017).

In the telecommunications industry, some of the digital leaders have helped transform this market. Amazon and eBay have, for example, made it easier to sell handsets independent of telecom companies. This makes it more difficult for operators to attract customers to long-term phone plans using deals on handsets. Moreover, Google is directly competing with incumbent telecom companies in the US by rolling out Fibre-to-the-Premise infrastructure in a number of cities.

The bottom line is that digital markets should not exclusively be analysed with the tools that we use for static analysis. One example of a problematic tool is the 'small but significant and non-transitory increase in price' (SSNIP) test. The SSNIP test is particularly inadequate in two-sided markets, as it fails to take into account how changing the price on one side of the market affects revenues gained from the other side. As Coyle (2018) points out, "the prices set by the platform on each of its 'sides' cannot be considered in isolation". Moreover, the multidimensional nature of products means that the monetary cost may not be the correct concept. The regulator may want to consider the trade-offs between quality, privacy, and price when evaluating market power.

Digital markets display different combinations of features, and should be analysed on a case-by-case basis. The challenge for policymakers is understanding both which framework is appropriate for each market, and the links between them – for instance,

between Google's web browser business, its search engine offering, and its email service. The central challenge, however, is the simple lack of operational models that capture the dynamics of competition.

4. Lessons from competition policy

Progress in digital markets takes place through innovation – the improvement of existing technologies, the development of new products, and the creation of new markets. The rate of innovation should in turn be viewed as the primary driver of long-run consumer welfare.

While tools and techniques aimed at static analysis may suffice in traditional markets – where the model of competition and the product provided are well-defined – they are likely to fall short in more dynamic contexts, such as digital markets. The faster-moving the market, the greater the need to focus on problems related to encouraging innovation.

In my view, regulators should pay attention to the following set of principles when regulating digital markets:

4.1 Focus on dynamic efficiency

Regulators should use a framework that focuses on dynamic efficiency. Static measures of competition and consumer welfare are generally uninformative in markets where progress largely takes place through innovation.

The real issue is what kinds of dynamic measures to use. Some scholars have called for a new economics to deal with these dynamic issues. While this would be useful, regulators do not have the luxury of waiting. The only realistic alternative, in my view, is to apply the tools and techniques we already possess in a dynamic context. One plausible measure, related to the idea of fragility, is the extent to which output and pricing decisions of the company are constrained by potential or actual competition.

4.2 Think outside the box on mergers and acquisitions in the digital economy

One concern voiced by some commentators and scholars is that some tech firms in the digital economy may have gotten too big (e.g., Wu, 2018). There are even acronyms that label these mega-firms at the top, such as GAFAM (Google, Apple, Facebook, Amazon and Microsoft).

I believe that regulators should be willing to think outside the box in terms of promoting greater competition in this sector. Policy could restrict the large tech firms in a few ways, ranging from breaking them up to setting behavioural rules. One of the most common proposals is that GAFAM should face stricter conditions on their ability to acquire other firms. Shapiro (2017), for example, when arguing for such an approach, noted "As a general principle, the greater and more durable is the market power of an incumbent firm, the larger is the payoff from preventing that firm from acquiring the smaller firms that, if left to grow on their own, would become its strongest challengers."

This approach has two potential problems. First, it is difficult to know which small firms might become strong challengers. For example, how might YouTube have changed the Internet ecosystem if it had not been purchased by Google?

Second, the possibility of being acquired is in itself a reason entrepreneurs start companies in the first place. Allowing such a purchase could reduce the static level of competition within a market; however, it provides a considerable incentive for entrepreneurs to take risk, and thus could increase dynamic efficiency. The 'prize' for successful innovation is often being bought out by a major tech company. Thus, allowing a dominant firm in a market to buy out smaller firms could counterintuitively increase the dynamic efficiency of the market.

Still, economists may want to explore ways of carefully balancing the trade-offs between restricting large tech firm purchases and potentially unintended consequences. An alternative to restricting large tech firm purchases is to use merger policy as a mechanism for promoting more competition in this space. Policymakers may wish to take a more relaxed attitude towards proposed mergers between firms that have the capability to become competitors to incumbent firms within the digital ecosystem.

A good example is the recent AT&T–Time Warner merger, which is still being challenged by the U.S. Department of Justice. A key claim that AT&T made was that the merger would make it easier to compete with some of the larger tech firms in areas such as advertising and the distribution of programming – for example, to compete with Netflix (Financial Times, 2018). To the extent such claims are credible, they should be considered in a positive light in merger proceedings if the aim is to inject more competition into areas where the large tech firms currently dominate.

4.3 Reconsider the ex-ante and ex-post approaches to mergers and regulation more generally

In a working paper with Lewis Evans (Evans and Hahn, 2010), I discuss optimal regulation in fast moving markets. While my specific concern was telecoms, many of the arguments we use apply to digital markets.

Regulatory policy can be viewed as falling into two categories: ex-ante, and ex-post. Ex-post regulation seeks to deal with problems as they emerge and places a great deal of emphasis on maintaining a competitive market. Competition law is generally ex-post. Ex-ante regulation, on the other hand, seeks to replicate the circumstances such a market would achieve using regulation. A simple example would be price reviews, which set prices within a market.

The problem for ex-ante regulation in digital markets is that the market is not only often out of equilibrium, but that the equilibrium it tends towards is also shifting. This means that seemingly sensible ex-ante regulation can often find itself out of date and holding back investment. In such cases, the dynamic costs of regulations have the potential to be much larger than the initial static gains from making firms adopt a particular price.

Moreover, ex-ante regulation is not only likely to be left out of date by the progress of the market. It may also be rendered unnecessary by the development of substitutes or rival products. This may be true in fast-changing markets, such as telecom and video services, where customers have more and choices as technology evolves. Regulating, for instance, the price of text messaging in a telecoms market could be an example of unnecessary ex-ante regulation. Furthermore, regulating traditional landline telephone service, with the possible exception of providing “lifeline” service for low-income customers, may no longer be necessary.

In contrast, a significant benefit of ex-post regulation is that it provides a greater degree of flexibility for firms to innovate than they would have under ex-ante regulations. Rather than simply fixing an outcome that firms must adhere to, regulators can examine issues on a case-by-case basis. This is likely to mean greater dynamic efficiency, and consequently also greater long run economic welfare. These arguments do not just apply to the obvious digital markets – online shopping, search, advertising, and so on – but also to other firms that compete in the digital space.

This is not to say that ex-ante regulation does not have a role to play. As Coyle (2018) notes, it can assist in helping to set a competitive playing field. To the greatest extent possible, innovators should be able to build on existing frameworks. Further, regulators could also examine the possibility of setting open technical standards, which encourage firms to produce hardware and software that are compatible with offerings from rival firms. Similarly, allowing customers to take their data with them when they leave a service – data portability – could well be something regulators wish to encourage.

What is less appropriate is trying to prescribe particular competitive outcomes. When regulators believe an intervention of this sort is warranted, they should be sensitive to the point that market structures are not fixed. Furthermore, regulators should consider including mechanisms by which regulations could be reviewed at regular intervals and removed if no longer necessary. It is important to provide firms with stability for investment decisions, so such reviews and mechanisms should be clearly set out.

5. Conclusion

Digital markets are both dynamic and poorly understood. While regulators should not shy away from appropriate interventions, they need to be clear on what shape such interventions should take.

To incentivise investment and innovation, it would be better for regulators to focus on ex-post regulation rather than ex-ante in most situations. Further, regulators should focus on the attainment of dynamic efficiency rather than short-term static gains, and should be willing to bend their usual approach to mergers and other issues of competition policy in promoting dynamic efficiency.

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Appendix A – Short biography

Robert Hahn is a visiting professor and former director of economics at the Smith School of Enterprise and the Environment, Oxford University, and a senior policy scholar at the Georgetown University Center for Business and Public Policy. He has served on the faculties of Harvard and Carnegie Mellon, and has also had senior appointments at AEI and Brookings. Bob co-founded and directed the AEI-Brookings Joint Center for Regulatory Studies, a leader in policy research in law and economics, regulation, and antitrust. Previously, he worked for the U.S. President's Council of Economic Advisers and was the chief economist on the White House drafting team for the 1990 Clean Air Act Amendments. His responsibilities included helping to design the innovative cap-and-trade system for limiting smokestack sulfur emissions.

Bob is currently conducting several economics experiments aimed at improving productivity, and promoting growth and sustainability. He also continues to do research on competition policy, government regulation, Internet policy, and understanding the benefits of breakthrough innovations. He served as a commissioner on the U.S. Commission on Evidence-Based Policymaking and is currently working with key decision makers on ways to promote evidence-based policy. Furthermore, Bob is the co-founder of two London-based companies, The Behaviouralist and Signol.

Appendix B – Curriculum vitae

Robert W. Hahn

Smith School of Enterprise and the Environment
University of Oxford
OUCE South Parks Road
Oxford OX1 3QY

EDUCATION

1977-81 California Institute of Technology, Pasadena, California
M.S., 1979, Ph.D., Social Science, 1981

1976-77 Stanford Graduate School of Business, Stanford, California

1971-75 Brown University, Providence, Rhode Island
B.A., Mathematical Economics, 1975
M.A., Economics, 1975
Languages: Spanish
Honors: Phi Beta Kappa

EMPLOYMENT

2018- Visiting Professor, Smith School, University of Oxford

2013- Senior Research Fellow, Institute for New Economic Thinking, Oxford Martin School

2009- Senior Fellow, Center for Business and Public Policy, Georgetown University, Washington, D.C.

2012-17 Professor and Director of Economics, Smith School, University of Oxford

2016-17 Commissioner, U.S. Commission on Evidence-Based Policymaking

2011-18 Associate Member, Nuffield College, University of Oxford

2014-18 Non-resident Senior Fellow, Brookings Institution, Washington, D.C.

2013-15 Robert Schuman Fellow, Global Governance Programme, EUI

2015 Simon Fellow, Property and Environment Research Center

2011-12 Director of Economics, Smith School, Oxford

2008-10 Senior Visiting Fellow, Smith School, University of Oxford

2008-10 Visiting Fellow, Nuffield College, University of Oxford

2003-08 Executive Director, AEI-Brookings Joint Center for Regulatory Studies, Washington, D.C.

1998-02 Co-founder and Director, AEI-Brookings Joint Center for Regulatory Studies, Washington, D.C.

1999-08 Non-resident Senior Fellow, Brookings Institution, Washington, D.C.

1989-07 Resident Scholar, American Enterprise Institute, Washington, D.C.

1997-02 Research Associate, Harvard University, Cambridge, Massachusetts

1990-01 Adjunct Professor of Economics, Carnegie Mellon, Pittsburgh, Pennsylvania

1991-94 Adjunct Research Faculty, Harvard University, Cambridge, Massachusetts

1987-89 Senior Staff Economist, Council of Economic Advisers, Washington, D.C.

1985-90 Associate Professor of Economics, Carnegie Mellon, Pittsburgh, Pennsylvania

1982-85 Assistant Professor of Economics, Carnegie Mellon, Pittsburgh, Pennsylvania

1981-82 Research Fellow, California Institute of Technology, Pasadena, California

1981 Instructor, Pitzer College, Claremont, California

1978 Economist, Council on Environmental Quality, Washington, D.C. (summer)

1976 Economist, World Bank, Washington, D.C. (summer)

1975-76 Division Staff, MITRE Corporation, McLean, Virginia

1973-75 Math Teacher, Transitional High School, Providence, Rhode Island

PUBLIC SERVICE AND ACADEMIC ACTIVITIES

1983- Co-founder of the Community Preparatory School, Providence, Rhode Island

2011- Editorial Board – *Oxford Review of Economic Policy*

2016- Board of Scholars, American Council for Capital Formation

2016- Academic Advisory Board, Technology Policy Institute

2016- Board of Directors, Long-term Education Investment Fund

2010-15 Defra/GES Environmental Economics Academic Panel

2010-11 World Economic Forum, Consumer Industry Agenda Council

2009- Editorial Board - *Journal of Benefit-Cost Analysis*

2009- Editorial Board - *Journal of Prediction Markets*

2008- Editorial Board - *Policy and Internet*

2006- Editorial Board - *Review of Environmental Economics and Policy*

2005-11 Columnist - *Economists' Voice*

2000- Editorial Board - *Milken Review*

2000- Research Advisory Board - Committee for Economic Development

2001- Editorial Advisory Board - *Regulation*

1994-99 Board of Directors, Annapolis Center

1989-93 Editorial Council - *Journal of Environmental Economics and Management*

1990-92 Cochairman of the U.S. Alternative Fuels Council

PROFESSIONAL AFFILIATIONS

American Economic Association

Association for Public Policy Analysis and Management

Association of Environmental and Resource Economists

AWARDS

American Association for the Advancement of Science Fellowship

Barr Award for Outstanding Research in Applied Public Economics

Brookings Fellowship

Caltech McDonnell Award for best graduating student in Social Science

Premier's Fellowship, New South Wales, Australia

SELECTED RESEARCH PROJECTS AND FOUNDATION SUPPORT

Agency for International Development, "Government Regulation of the Marketing and Processing of Crops in Uganda"

Electric Power Research Institute, "Organizational Aspects of Power Pooling"

Electric Power Research Institute, "Markets in Transferable Property Rights"

Environmental Protection Agency, "An Examination of EPA's Controlled Trading Options"

Environmental Protection Agency, "An Evaluation of Mechanisms for Complying with the Ozone Standard"

Environmental Protection Agency, "Designing Markets in Tradable Allowances for Reducing Acid Deposition"

Environmental Protection Agency, "Promoting Conservation Through Price Rationalization"

Environmental Protection Agency, "Evaluation of Economic Incentives for Hazardous Waste Management"

Environmental Protection Agency, "Economic and Environmental Analysis of Alternative Fuels"

Matsushita Foundation, "Educational Development"

Mott Foundation, "AEI-Brookings Joint Center for Regulatory Studies"

National Science Foundation, Decision, Risk and Management Science, "The Emergence of Markets for Controlling Risks"

National Science Foundation, Regulation and Policy Analysis, "Spot Markets for Electricity"

National Science Foundation, Decision, Risk and Management Science, "Markets for Controlling Environmental Risks"

New South Wales Government, Australia, "Economic Approaches for Protecting Environmental and Natural Resources: From Theory to Practice"

Office of Technology Assessment, "Designing Economic Incentives for the Clean Air Act"

Rhode Island Foundation, "Options for Alternative Education"

Smith Richardson Foundation, "AEI-Brookings Joint Center for Regulatory Studies"

World Bank, "The Benefits and Costs of Regulation in Developing Countries"

World Bank, "Application of Economic Incentives to Environmental Problems in Developing Countries"

SELECTED PUBLICATIONS[3]

Working Papers and Work in Progress

"Using Big Data to Estimate Consumer Surplus: The Case of Uber," with Peter Cohen, Jonathan Hall, Steven Levitt, and Robert Metcalfe, NBER working paper, September 2016**,** under revision.

"The Ridesharing Revolution: Economic Survey and Synthesis," with Robert Metcalfe, forthcoming in Oxford University Press book.

[3] Many of my scholarly publications can be found at www.ssrn.com.

"The Economics of Water Security," with Dustin Garrick, proposal accepted by *Review of Environmental Economics and Policy*, under revision.

"Estimating the Trade-off between Efficiency and Equity from Energy Subsidies," with Robert Metcalfe, under revision, *AER*.

Friend of the Court Brief on Climate Change for the U.S. Supreme Court, with Tom Schelling and Vernon Smith, May 2013.

"Refer-a-friend Economics: A Theoretical and Experimental Analysis," with, Jonathan Davis, John List, Robert Metcalfe and Michael Price, draft.

"Regulating the Tech Titans" with Scott Wallsten outline submitted to JEP.

"The Behavioralist as Policy Designer: The Need to Test Multiple Treatments to Meet Multiple Targets," with Robert Metcalfe, David Novgorodsky and Michael Price, NBER working paper, under review *JAERE*.

"Overconfidence in Future Behaviors: Getting Customers to Use an Online Platform for Water and Energy Management" with Robert Metcalfe and Dmitry Taubinsky, in preparation.

"Getting Students to the College Entrance Test on Time: Can Incentives Help?," with Ty Cruce, Amos Dupuich, and Robert Metcalfe, in preparation.

"Understanding the Effectiveness of Bill Tracker Alerts on Energy Consumption," with Robert Metcalfe and Florian Rundhammer, in preparation.

"How Urban Mass Transit can Reduce Congestion: A Natural Field Experiment with BART," with Robert Metcalfe and Eddy Tam, in preparation.

Journals

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the behaviouralist

[Address redacted]

4 December 2018

TO: Digital Competition Expert Panel

On 2 August 2018 Sky News reported that the UK Government has set up a panel examining competition in the technology sector.

It was reported that one of the issues the panel will assess is whether the whole of society is benefiting from technological progress.

My answer to that question is a resounding no. I believe as technology progresses there is a real danger of a technological underclass where disabled people, who could benefit most, get left behind.

All my life technology has played a major role in giving me independence. I was born with muscular dystrophy, which causes severe muscle weakness in my arms and hands rendering me quadriplegic and unable to easily access my smartphone screen, computer keyboard, or smart watch face in many situations.

Technology enabled me to go from a small village in west Wales, where I grew up, first to university in Scotland, then a long career at the BBC, and now running a personal campaign on access and affordability of technology for physically disabled people. Technology has helped create a level playing field despite the difficult cards I have been handed in life.

Now as my muscular dystrophy progresses voice activated technology has become even more important in my daily life: everything from communicating with family and friends, to turning my lights on, and turning the thermostat up. It helps me get things, most people take for granted, done.

In the past ten years we have seen the proliferation of digital communication technology and the rise of tech giants like Apple, Google, Microsoft, Amazon, and Facebook; huge trillion dollar conglomerates who we all rely on more and more to communicate, and get things done.

Over the past year I have been looking into smart home and voice controlled technology, how helpful it is to people with severe physical disabilities, what the big tech companies are currently doing on accessibility and affordability, and what is the current nature of state provision via the NHS. What I have found are major gaps that need filling.

I have lost two brothers this year to the same disease and I am on borrowed time. Technology was important to them too but they were continually frustrated by affordability, accessibility, and lack of state provision. So this is an issue close to my heart, and about legacy. In the time I have left I want to effect lasting change so people similarly affected who come after me can realise their full life potential through technology.

My vision

My vision is a world where physically disabled people particularly benefit in terms of independence, choice and control, from technical innovation in consumer devices produced by companies like Apple, Amazon, Microsoft, Google, and Facebook.

These large tech companies need to be encouraged and incentivised to explore and deliver consumer products that meet the additional needs of disabled people.

The cost of consumer voice-activated smart home technology is very expensive especially when disabled people are statistically more likely to be on benefits and in poverty so there is an issue of affordability. Disabled people who are so reliant on technology for independence need more help to access consumer devices at a discounted cost in much the same way as other consumers, such as students or charities, can.

The big tech companies need to do more to make their technology more accessible in terms of voice control for physically disabled people who wish to control their environment, and communicate by voice commands. They could and should be doing a lot more. As a contributor to my recent article attached said: “Voice control of devices opens up the device to those physically impaired and allows them to interact as an individual on social media, organise their daily routines and gain access to the wealth of knowledge on the internet. How would you feel if you couldn’t post a Facebook update or tweet a response? In this online world, these things are important.”

The NHS does not currently supply voice-activated consumer devices such as Alexa, and all the smart gadgets you need to go with it to be truly independent. I had some limited provision only as a trial; it is not normally supplied and the cost to achieve good levels of independence can run into thousands but the benefits to the individual are enormous in terms of independence and psychological well-being. The NHS needs to open up more to supply these consumer devices to people and one way is to give people a "personal healthcare budget" where they can go out and buy their own smart devices, rather than that which is on the NHS approved providers list for medical devices. At the moment personal healthcare budget are not widespread and available everywhere. I know my own local central London NHS does not offer them.

Legislation

There are laws in the UK, US, and elsewhere that make businesses provide ramps and toilets to provide access to disabled people but for some reason big tech companies seem to get away with shirking their accessibility responsibilities. I’m beginning to think there needs to be a law that would require the likes of Facebook, Twitter, Apple, WhatsApp etc to provide full text control in their text input boxes so people can dictate into them efficiently and naturally by voice, if that is their only method of communication because of physical disability. This is currently not the case, which makes it difficult for people like me to post to Facebook or Twitter, for example, or send a message by Whatsapp by voice dictation. Technologically, this is perfectly possible but time and again it is not considered by the big tech companies, or APIs developers rely upon are discontinued causing huge problems for end users.

It may be that existing UK equalities legislation covers this issue – but the focus has always been on websites by mistake. The provision of software – either locally or online – is a service so should be covered. Interestingly, with software moving online to the SaaS model, the website accessibility issue becomes more and more relevant. I am not a lawyer but as the internet does not respect borders, and the sites/apps probably originate on servers in California or Iceland, I wonder if UK equality laws apply. Perhaps something could be done at EU level as a block (though Brexit complicates that now).

Taxation

I would like the Government to undertake to explore ways by which taxation and other policies might be used to encourage major technology companies, such as Apple, Amazon and others to prioritise and invest more in making their technology and products accessible, available and affordable to people with disabilities.

I see the **digital services tax** when it introduced in 2020 as a unique opportunity to influence the government's thinking in this area as it frames new legislation and, most importantly, through carrots (rather than sticks), effect real change in tech companies' behaviour and attitudes to accessibility and affordability for disabled consumers. More so than the Equalities Act, which has failed in this area of accessibility.

Big tech companies use accessibility to blow their credentials but dig below the surface, and the marketing hype, and there are gaping holes. Apple, Microsoft, Google et al claim they are supposedly accessible, but you can't control many areas of their platforms by voice. If some of the fault is with applications like Facebook, Whatsapp and Twitter they should throw them off their platforms until their apps are fully accessible.

When billions of people on the planet each day use their products, generating huge profits, I do think these tech companies have a social responsibility to make their technology accessible and affordable to the most severely disabled. If they spent less time on minimising their tax liabilities the world would be a better and fairer place.

The World Health Organisation estimates more than one billion people require assistive technology, while 90 per cent of these have no access to it. I am at one with the WHO in believing assistive technology should be an important pillar of universal health coverage around the world.

It should never be the case that those who have the privilege of income benefit from this life changing technology, and those that don't live much less independent lives. I realise we need to tread carefully as any kind of tax can be detrimental to innovation.

My humble suggestion to the biggest tech giants Amazon, Google, Apple, and Microsoft is to join together and set up a *global accessible technology fund* to help severely disabled people access their expensive technologies. If each of them pledged just one per cent of their hefty profits to such a laudable venture it would transform lives. It is highly unlikely to happen, world financiers who back them would block it, but what a nice idea it would be if it did. I believe it is perfectly possible to innovate and make great technology with a social responsibility.

Everyone deserves to enjoy a full and active life. People with long-term incurable illnesses often don't live in hope that science will find us a cure. What we really need is technology to liberate us and allow us to fly as high as we can go in our lives because technology inspires, and levels the playing field. You are only reading this evidence because I am using voice recognition software to dictate the words on to this page.

Once upon a time I was a little boy sat in a wheelchair with an incurable illness dreaming of becoming a television producer on network television. Thanks to technology that dream came true. For many people like me the thing that stops us living the best lives we can is a lack of accessible and affordable technology.

So for all the little boys and girls in the world sat in wheelchairs and trapped in bodies that don't work, dreaming of becoming a theoretical physicist, astronaut or indeed a television producer, don't price them out of their future, give them the technology to help them make their dreams come true.

This is why this stuff matters.

I encourage the Panel to read the attached articles as they cover all the main issues I am campaigning about. Even though they are mainly about Apple and Amazon they apply equally to all the major tech companies. The articles also contain quotes from experts in assistive technology who corroborate my personal experiences with technology.

From my life experience I am passionate about the way technology can deliver independence to the most severely disabled people. While it has to be noted the major tech companies do a lot to make their software and devices the accessible I strongly believe they are failing in a number of areas, and they do have the resources to do much more than they are currently doing.

Yours Faithfully

Colin Hughes

Apple’s trillion dollar amnesia

It's been a busy time for Apple of late as it released new iPhones, Watches, an iPad, MacBook and operating systems. But in its rush to preserve its top spot in the mobile device market has the trillion dollar tech giant contracted a dose of amnesia when it comes to accessibility features for its disabled consumers? Colin Hughes investigates.

On 17 May Global Accessibility Awareness Day Apple marked the occasion by highlighting its accessibility credentials on its apple.com homepage. Under the heading it proudly announced, “technology is most powerful when it empowers everyone,” with a link pointing to the company’s accessibility microsite, introduced by a film.

Everyone? Well, not me. I’m not feeling very empowered by Apple’s latest offerings released a few weeks ago in mid-September, at least when it comes to improvements to accessibility for people like me who have physical disabilities. Let’s get one thing out of the way. Apple to its credit does offer a range of accessibility features for those with physical, sight, hearing, and learning impairments. Arguably, these features are better than those offered by its competitors such as Google and Microsoft.

I know little of how well they work for people with sight, hearing, and learning impairments. I’m writing from the perspective of someone with a physical impairment, namely severe muscle weakness in my arms and hands rendering me quadriplegic and unable to easily access my iPhone screen, MacBook keyboard, or Apple Watch face in many situations.

I share Apple’s aspiration to do much more by voice activation on the gadgets I currently own but the tach giant seems to be ignoring the potential of voice commands and control for accessibility purposes.

At the moment, the iPhone and iPad Apple provides three main ways to access these iOS platform devices if you have a physical disability – touch, voice (Siri) and switch control. If, like me, you have little or no functional arm/hand movement then these are the options and they haven't changed much in several years.

Siri can do some useful things, but it is still very limited e.g. messaging works, phone calls partly work (you cannot answer the phone or hang up using your voice). There are no options in Siri to control the Books or Kindle apps, although Siri can control third party apps like Skype and Whatsapp.

Apple doesn't think of Siri in terms of accessibility. It is too busy pushing Siri as a mainstream feature for everyone. At its flashy product launches and hardware demos the accessibility benefits of speech recognition seems to get tossed aside. Instead, it pitches voice control in terms of what can arguably be called gimmicky things like ordering your coffee from Starbucks while turning your lights off on your way out to work.

In my opinion there should be a section within *Settings – General – Accessibility – Interaction* on all mobile iOS and macOS devices devoted to people with physical disabilities who want to control their iPhones, iPads, MacBooks and Watches by voice commands.

Switch control is an accessibility feature that allows access to most things. It requires a specialist external switch and adapter for it to work and there are numerous types of switch available (many of which Apple sell) so finding an option that fits is usually possible. I don't find switch control helpful as often I cannot reach a switch and it does feel quite old-fashioned technology. There is also the added cost of having to buy the hardware and sometimes pay specialist third-party developers to set things up.

It is also possible to use a stylus in your mouth to touch the screen of an iPhone or iPad as you would with your hand/finger. It requires quite a lot of skill and careful mounting of your device.

Face ID came to the iPhone X in 2017 and uses facial recognition technology to allow you to use your face to unlock, log in and pay for things. To its credit Apple has included an accessibility feature within Face ID so if, for example, like me you have to wear a ventilator mask over your face at some points during the day Face ID has a clever way of recognising you with the mask on, or the mask off.
macOS has a range of accessibility features built into Mac computers and laptops including help with dictation, Siri, keyboard and mouse control, to name but a few. Against this background I have been taking a look at Apple's latest accessibility offerings released a few weeks ago.

iOS 12

Whilst Apple's latest mobile iOS update focuses on making things work, instead of adding new features, Siri's new Shortcuts app is a new standout feature in iOS 12 that allows iPhone and Apple Watch users to use Siri to step through multistep routines. Shortcuts is designed to allow you to create custom commands in Siri that launch apps or combine a number of actions.

Amazon Echo has something similar and calls them 'Routines'. Say "Good morning" to Alexa and she can give you your news update, the weather, the state of traffic on your commute and then boil your smart kettle for your morning coffee – all with one easy command. Now with Shortcuts, Siri does the same.
If you have a physical disability fatigue can be a problem so this convenience can be very helpful, which widens your use of technology.

When Siri Shortcuts was announced in June it was rumoured to give people with impairments a real boost in terms of accessing their Apple devices. However, now it

has been released, I can't find anything specific in terms of accessibility shortcuts and actions within the app. Look in the gallery of pre-installed shortcuts that Apple provides to get you started and there is not a single one related to accessibility.
As someone who has great difficulty accessing the iPhone screen with my hands I would like to ask Siri, via a custom Shortcut, to switch Auto Answer on and off so incoming calls are automatically answered by my iPhone. After all, what is the point in having this feature if you need to use your hands to switch it on and off. Auto Answer can be found in *Settings > General > Accessibility > Call Audio Routing > Auto-Answer Calls*. I am really disappointed this simple action is not yet possible. How could Apple completely ignore those with physical access issues when Shortcuts has the potential to be such a liberator?

As I write this article Apple has belatedly gone on record as saying it sees 'huge accessibility potential' for Shortcuts in iOS 12. In a statement Senior Director of Global Accessibility Policy & Initiatives, Sarah Herrlinger, spoke about the accessibility benefits of Shortcuts She explained the company is receiving feedback from users on how they're using Shortcuts to combine multiple tasks into one for accessibility benefit:

"It's already making a difference — helping people across a wide range of assistive needs simplify every-day tasks like getting to work, coming home, or staying in touch with friends and family.

We're getting great feedback about how powerful the technology is in streamlining frequent tasks and integrating multiple app functions with just a single voice command or tap.", she said.

Apple really is a bit late to the party with this but these comments are perhaps grounds for some optimism. Whilst it has done nothing to signpost the benefits of Shortcuts to physically disabled people I don't doubt they are proving of benefit. I am one of those people that have been feeding back to Apple in the last few weeks expressing disappointment about the lack of accessibility specific features in the

Shortcuts app at the launch of iOS 12. If Apple was ahead of the game in this area, there would not be this ridiculous disconnect and accessibility related shortcuts would have been available at launch. Instead of demonstrating a somewhat gimmicky demonstration of Shortcuts at their iOS12 preview in June Apple could have shown how the app can transform the life of a disabled user. How inspiring would that have been to the gathered masses who watch these evangelical launch events.

watchOS 5

Last year I reviewed Watch series 3 and watch OS 4 and revealed how the need to physically raise or twist one's wrist to wake the Apple Watch face in order to activate Siri to get things done to all intents and purposes cut me off me from accessing the Watch.

Somewhat painfully, I have come to realise that fixing an Apple Watch to my wrist is akin to fixing it to an inert slab of meat. It does practically nothing for me because my body cannot initiate sufficient physical actions to stimulate the watch into action. But it doesn't need to be like this because as a device the Apple Watch has so much potential to be of tremendous help to someone in my position. It is simply the case that Apple has failed to think about hardly any accessibility features for physically disabled people in the Apple Watch apart from a wheelchair work out activity feature.

Last year I decided to keep the Watch in the hope that Apple would come up with a solution this September. As the year went by rumours of new AirPods 2, (Apple's popular wireless Bluetooth earbuds), with a dedicated chip for Siri hands-free activation gave me hope that I would finally be able to wake the watch face by a voice command and take full control of my Apple Watch for the first time. Hands-free Siri activation isn't currently a feature on the first-generation AirPods. No more

futile attempts to raise my wrist, or tap the input to get a reaction from Siri, is what I thought.

My hopes were raised even further when Apple appeared to tease the feature at its September 12 iPhone launch event.

The opening video that it used to kick off the event showed a woman wearing AirPods. Stopping in front of a pond, she says, “Hey Siri,” but significantly doesn’t tap either AirPod to activate Apple’s voice assistant.

With my hopes rising as the launch event unfolded I thought to myself is Apple teasing a new a pair of AirPods this year with the much needed hands-free ‘Hey Siri” feature I have been waiting for? Sadly, a new version of Airpods did not materialise and watchOS 5 remains as inaccessible to me today as watch OS 4 did last year. I can’t put into words how disappointed and deflated I felt that day. To be teased and eventually let down in Apple CEO Tim Cook’s gushing and gimmicky presentation felt especially cruel.

Having checked out watchOS 5 in some detail Apple has come up with no accessibility features in its latest version of watchOS for people with physical disabilities.

In terms of hardware I haven’t had the opportunity to try a new Apple Watch series 4 but it does come with a fall detection feature which if it detects a hard fall, it can help connect you to emergency services if needed. This could be useful for anybody with mobility issues and is to be welcomed. I just wish Apple would take this kind of thinking a lot further in it’s development of the watch.

Superman

In trying to assess the efficacy of Apple's accessibility features for people with physical disabilities, and to explain to people who don't have experience of disability, I apply what I call the "Christopher Reeve test". The story of the Superman actor who was paralysed from the neck down in a riding accident is still well known to many but dying in 2004 Reeve missed the era of smartphones and watches. I often ask myself, if he were alive today and, for example, I put an Apple Watch on his wrist what use could Christopher Reeve make of it? Like me, his arms and hands did not work after his accident, and the answer that comes back to me time and again is nothing. In designing its devices Apple should set the bar high and apply the Christopher Reeve test.

macOS Mojave

Things don't look much brighter with the release of macOS Mojave the new operating system that runs on Mac computers and laptops.

The main way I access macOS on my MacBook Pro laptop computer is with Dragon for Mac speech recognition software. It helps me write anything from this article to a text message to my mum. This past week I have been crushed by developer Nuance's decision to discontinue Dragon Professional for Mac.

Nuance's Dragon software is useful to everyone from lawyers and home users to doctors as a way to turn spoken words into printed text. However, it is much more than a convenience to me. I am wholly reliant on voice dictation software for corresponding. I do not have a plan B for writing anything.

Nuance announcement that it is discontinuing the Mac version of Dragon, has put me and many others a difficult situation. While the software will continue to work, there will be no future updates, meaning I will need to find other ways to get everyday activities most people take for granted done.

I have a follower on Twitter with a disability who tweeted this reaction to the news:

*DAMNIT!!! I needed that to be productive in the Mac; now I've got to go back to Windows *and* this limits my employability! VERY PISSED/FRUSTRATED/DEPRESSED!*

Patrick is legally blind, has cerebral palsy (with unaffected speech), and is a speech recognition expert. He says: "I cannot rely on discontinued assistive technology in my job. In the long-term I will need to switch to Windows as my desktop computing platform for work. At best this will affect my productivity in my current job, making me slower, at worst I will have to change jobs. It's possible Apple will do something to fill the gap left by Nuance. But that's going to take a long time; possibly years. I'm sure I'm not the only one in this situation. There will be other users who have to switch to using Microsoft Windows and/or switch jobs."

Neil Judd is a digital inclusion expert for Hands Free Computing who help people with assistive technology: He echoes what Patrick says about the importance of this software to productivity and employment. He said: "Voice recognition on the Mac with the dictation app and Dragon software is vital in being able to retain independence and carry on with daily tasks. For some it has meant the difference in keeping their job or not, keeping up with targets and expectations"
People with dyslexia and blind people are also likely to be affected adversely along with severely physically disabled people like myself.

Other options don't really cut it for me. It would be one thing if the other options for Mac users could match Nuance's Dragon product. Unfortunately, there isn't anything close to Dragon at the moment. Apple's own voice dictation app is inferior because it doesn't learn from your mistakes, it can't cope with work jargon, foreign names, you can't train it to recognise words so it doesn't repeat the same recognition mistake, you can't add to its vocabulary. So if there is an error in recognition when dictating people like me can't take to the keyboard and simply carry on.

That leaves me with the unenviable choice of either making do with an inferior product or dropping my Mac in favour of Windows, where Nuance still supports

Dragon. I am a Mac user, I am steeped in the Mac ecosystem with MacBook Pro, iPhone, and Watch with all that seamless integration between devices, It is not a simple decision to switch to a Windows machine and get Dragon for Windows. The writing was on the wall for me when I stumbled across a Youtube video of a 2016 user group presentation, where Nuance R&D program manager Jeff Leiman rather candidly noted how Apple's accessibility API restrictions left it unable to implement some of the features it was able to offer for the Windows version of Dragon. Curiously after this video received publicity in the technology press recently the video has coincidentally been removed from YouTube.

Perhaps most frustrating is that the technology to do voice control properly is already here. Apple and others have made a point of working it into their hardware demos, but the involvement ends there, and when it can't be used to showcase a new product, speech recognition seems to get tossed aside.

If I was Tim Cook, the CEO of Apple, a major player such as Nuance walking away would set alarm bells ringing. I really hope a solution can be found as this harms lots of folk and puts us in a far worse place. Technology is meant to do the opposite. Lunis Orcutt is a Nuance certified/licensed reseller and runs the KnowBrainer Speech Recognition Forums, which he calls the world's most popular speech recognition forum. He says: "Nuance bailed out of supporting Mac because they couldn't justify the R&D with enough sales".

"The Mac OS is harder to develop for and only occupies 12% of the market where Windows owns 86% of the market. You might see a lot of Mac computers and movies and TV shows but in reality, this is much rarer than you might think. Most businesses and pretty much every part of the government uses Windows." he added.

Peter Hamlin, a Rehabilitation Engineer, whose role is the appliance of assistive technology and specialist configurations of COTS (Commercial Off-The-Shelf) products to support those with severe disabilities, in the health service says Apple is notorious for not playing well with other developers with the strict limits it places

with its APIs. He said he has been aware of an entire group of Apple accessibility apps being suddenly 'wiped out' because of API changes by Apple:

"Rather than having to put up with this nonsense, it is no wonder that many more developers choose to write software for Android and Windows (where both platforms go to great lengths to provide support for legacy apps) than the Apple platform".
"Rather than stifling development, I think that Apple would be well advised to allow a select number of developers of significant solutions for Apple platforms – including those providing accessibility solutions not supported by Apple – enhanced access to Apple APIs" he added.

I believe Apple now has a responsibility to develop their own voice recognition software on a par with Dragon, or allow developers of significant solutions for Apple platforms, enhanced access to Apple APIs.

Given Siri's proven voice skills, you'd think speech recognition would take centre stage in macOS. If Apple truly believes in productivity the future of speech recognition in your Macbook probably isn't using Siri to launch a movie to watch on TV. It's writing about the experience—but with your voice rather than with your fingers on a keyboard.

Neil Judd says: "Steps are being made to make devices accessible via voice control. The recent boom in virtual assistants and devices such as Amazon Alexa, Google Home, Siri and Apple Pod show the demand. However, as great as these devices and functionality are, they are not necessarily aimed at the accessibility market. They are marketed more as a fun entertainment gimmick, whereas for those physically impaired they really are a lifesaver, giving back independence and wellbeing."
I think it's pretty obvious that Apple has the ability, technically, to create its own impressive speech recognition application. It has the massive computational power of the cloud at its disposal and can crunch and correlate your voice input together with whatever other data Apple knows about you, generating the intelligence that is

the heart of Siri. Why it, and the other tech companies, have not done so thus far is a mystery to me.

As a direct result of the Nuance decision I am trying out Dragon Naturally Speaking 15 on Windows 10 this past few days. It is noticeably a more advanced and accurate speech recognition app than Dragon for Mac but ultimately it is swings and roundabouts. Dragon for Mac on macOS seems to work in more text boxes but without full text control for voice. Direct dictation in Dragon Nationality Speaking running on Windows 10 is only available in approximately 10% of applications. Non-Dragon friendly applications typically require opening a dictation box, dictating, and then transferring your dictation to the target application whether that be Facebook, WhatsApp or Twitter, which is tedious and not at all productive. Setting aside the developer Nuance for a moment, I think all the big tech companies should come up with a uniform system that allows full text control by voice wherever you have to input text by voice. This is really important stuff for people like me and I'm sure everyone agrees that communication should be a human right. At the moment it is a real mishmash between different applications, WhatsApp, Facebook, Twitter, as to which ones will support full text control by voice and those that don't. Quite frankly I am tired of putting up with this crap.

Lunis Orcutt says: "Technically, Twitter, Facebook, and WhatsApp could've made their applications Dragon friendly but didn't feel the need because they're not in the speech recognition market."

"Making Facebook etc. more Dragon friendly is much harder than you might think because these are HTML fields and Nuance chose not to support HTML, to save money. HTML is prettier and companies nearly always go with what looks best rather than what works best and that will probably never change."

If you think about it in this day and age there are laws in the UK, US, and elsewhere that make businesses provide ramps and toilets to provide access to disabled people but for some reason big tech companies seem to get away with shirking their

accessibility responsibilities. I'm beginning to think there needs to be a law that would require the likes of Facebook, Twitter, Apple, WhatsApp etc to provide full text control in their text input boxes so people can dictate into them efficiently and naturally by voice, if that is their only method of communication. Developers like Nuance can only do so much: it is up to the main players to play ball and do the right thing.

It may be that existing UK equalities legislation covers this issue – but the focus has always been on websites by mistake. The provision of software – either locally or online – is a service so should be covered. Interestingly, with software moving online to the SaaS model, the website accessibility issue becomes more and more relevant. I am not a lawyer but as the internet does not respect borders and the sites/apps probably originate on servers in California or Iceland I wonder if UK equality laws apply. Perhaps something could be done at EU level as a block (though Brexit complicates that now).

Accessibility is often used by big tech companies to blow their credentials but dig below the surface, and the marketing hype, and there are gaping holes. Apple, Microsoft et al claim they are supposedly accessible, but you can't control many areas of their platforms by voice. If some of the fault is with applications like Facebook, Whatsapp and Twitter they should throw them off their platforms until their apps are fully accessible.

Home control

In terms of controlling a smart home it is good to see Apple bringing its Home app to macOS Mojave on Mac computers, and making Siri always on and listening on some MacBooks is also to be welcomed. The more devices that have Siri on board available for voice commands the better as far as I'm concerned.

But while Siri has seen some major improvements in iOS 12, in terms usability and access, when it comes to controlling your smart home Apple and Siri are falling behind Google and Amazon in the smartphone race. I have written previously about how I had to build my own smart home with Amazon technology because Apple does not work with enough developers and device manufacturers.There are several devices I would like to control by Siri but unfortunately they are not yet compatible with Apple HomeKit.

As I have discovered over the past year one of the main stumbling blocks if you are physically disabled and want to turn your home into a smart home to increase your independence is cost. Neil Judd explained: "At the moment, if you want to home automate your house via voice control it all seems very nice and exciting until you start totalling up how much all these devices will cost you. You have the controller device which maybe affordable such as the phone, Amazon Echo, Apple HomePod, Google Home, but then you must factor in smart light bulbs, thermostats, plugs, blinds, doors, kettles. If you are not careful this can run into thousands of pounds very easily, and who can readily afford that without funding?"

"Perhaps these devices should be made available via funding grants as standard and not seen as a home improvement. That would make a big difference",he added.

The UK government announced in the budget last month that it will be bringing in a digital services tax on tech giants from 2020. I think instead of a crude revenue raising tax the big tech companies should be given the option of doing more to make their devices and software more accessible and affordable in exchange for for certain tax breaks. More of a carrot than stick approach to get them to fall into line.

Lunis Orcutt produces a third party command utility, which allows you to run your computer completely hands-free, when included with Dragon. He offers his Knowbrainer command software free to anyone, worldwide, with any physical disability. Perhaps tech giants, awash with cash, could take inspiration from a small developer like Lunis.

At the very least tech giants like Apple could start by enabling severely disabled people to access their consumer devices at a discounted cost in much the same way as other consumers, such as students or charities can.

Government could also ensure all disabled people are given access to individual health budgets to give them the choice of purchasing the technology that best meets their needs, rather than that which is on the NHS approved providers list for medical devices.

Apple Pay

I'm disappointed that Apple didn't release any new features to make Apple Pay more accessible to people like me this year.

Apple Pay lets you make purchases conveniently and securely in shops, apps, and on the web using Safari. It lets you pay for goods by moving your iPhone over a contactless reader, removing the need to use a physical debit or credit card or enter a PIN.

Does Apple think I don't want to spend money in convenient ways in shops, restaurants, and online like everywhere else? Perhaps I am considered too poor to pick up the tab when I go out for dinner with friends?

There is a setting in accessibility to use Apple Pay, which is in Settings – General – Accessibility – Side Button – Use Passcode for Payments. It is helpful for people who can't double press the side button. However, in many situations, I find it difficult accessing the screen to input a pass code. I feel exiled from Apple Pay as a whole. I have it set up on my iPhone X and Apple Watch Series 3 but I can't make full use of it Has Apple offered an alternative option for people like me? No. I don't have the technological answers but surely the brains at Apple, and the banking world, could between them come up with a secure way of confirming a payment other than

having to be physically able to press the side button, input a pass code, or raise one's wrist on an Apple Watch? Biometrics should hold the answer – Face ID, or individual voice profiles for Siri so my unique voice via my Airpods could verify a purchase "Hey Siri, please pay," for example.

Banks are already using voice ID for verification purposes. Due to access issues day to day purchases in shops have to be done by my carer using my debit card and with me having to hand over my PIN. There has to be a more accessible way for people like me to make purchases through services like Apple Pay. I don't think Apple and it's banking partners have considered this issue enough. Tap and pay is helpful but the amounts are low £30 and anyway I want to use my mobile device as it is more secure.

Conclusion

Apple's accessibility features, for people with physical disabilities particularly, are the same old, same old. Nothing really new or revolutionary this year but that has been the case for many years now. When it comes to improving accessibility for physically disabled users Apple remains stagnant.

It's not just me who is frustrated. Visit the Apple forums and you will see a lot of frustration expressed by disabled users at amongst other things auto lock not working under the guided access accessibility feature following the upgrade to iOS 12.

Problems like this are not a bit of inconvenience; it can really affect people's independence and ability to live and function as human beings. It is particularly frustrating that Apple does not seem to be listening. You can submit feature requests, and post in its forums, but there is little change as a result, and what changes that do come take a very long time.

Apple and all the tech companies need to take a more inclusive approach to the design of their software and hardware. It may even be worth their while trying out features on disabled users first because on many an occasion I've seen features that start out as being useful for disabled people gaining mainstream popularity and uptake.

At the moment it all feels tokenistic, with no joined up thinking, and accessibility features coming as an after thought. The Shortcuts app is a prime example of that; it has so much potential but has not been optimised for accessibility and disabled users who stand to gain most from it. The priority for Apple appears to be the gimmick it can show off at its flashy annual new iPhone launch event, and not helping people like me live more useful and productive lives.

I buy Apple products, I spend thousands of pounds on Apple products, and I'm not asking for charity, I'm simply asking tech companies like Apple to show greater awareness and corporate social responsibility for the benefit of everyone.
I am not expecting them to become medical device manufacturers but I am encouraging Apple and others to explore, design, and deliver mainstream consumer products in a much more inclusive way that meets the additional needs of disabled people.

For people like me, being able to control my Apple device by voice, effectively, can make or break my day; my life even. Apple just doesn't seem to get that at the moment, and it isn't listening.

Accessibility features like voice activation open up a whole new world for physically disabled people. Google has recently published this inspiring video of what this technology can do to transform lives:

Accessibility is important because the simple things we all take for granted like being able to make a telephone call, answer a call, check the weather and notifications, or

write a message are made available via voice control. But when it falls short it prevents or hinders my ability to keep in touch with family and friends. That is no small matter and I'm sure everyone can relate to that.

Neil Judd from Hands Free Computing sums up the importance: "Voice control of devices opens up the device to those physically impaired and allows them to interact as an individual on social media, organise their daily routines and gain access to the wealth of knowledge on the internet. How would you feel if you couldn't post a Facebook update or tweet a response? In this online world, these things are important."

As Apple shares sink as Christmas sales forecast disappoints investors perhaps it could do with a hand and a few more sales from people like me.

Digital Competition Expert Panel

Dr Liza Lovdahl Gormsen* – Written Evidence

1. What are the emerging benefits and harms from digital markets such as social media, e-commerce, search, and online advertising tending towards only one or a small number of big firms?

1.1 For the purposes of this discussion, digital markets may be defined as those where use by consumers of one provider's services generates user information (or user data) as a costless by-product, this information being subsequently analysed and used by the provider to adapt its services better to users' preferences, incorporate new features or develop new products and services. Importantly, the most popular digital markets are 'multisided' markets.[1] There, market players are 'platforms' that mediate interactions between two or more separate groups of customers, thereby generating value. Search engines, social networks and ecommerce platforms are all examples of digital, multisided markets. For example, social networks connect users on one side (the user side) with advertisers on the other side (the advertiser side). Critically, the services provided and the 'connection' performed by the platform rely to a great extent on user data. Continuing with the example of social networks, based on the data gathered from user-generated content and user interactions with the platform, social network algorithms can increase the relevance of social network engagement, suggested friends or suggested interests that are shown to users. In turn, the same data collected from the user side is processed to identify consumers that may be interested in specific ads, ads that are then shown to such consumers during their interaction with the platform. Accordingly, user data plays a fundamental role in the business proposition of digital markets' players.

1.2 The analysis of (big) data, performed through algorithms and advanced data processing techniques (big analytics), becomes more valuable to the extent that it allows for specific patterns to be found and new correlations to be made between several datasets coming from combined different sources, thereby allowing to deduce or infer new information and potentially predict trends and behaviour or assess the likelihood for certain events to occur.[2] This technological development has brought about important benefits for consumers in digital markets. First of all, the collection and processing of data has conferred upon digital firms the ability to identify new trends and develop new products and services of particular relevance for users.[3] Secondly, detailed knowledge on consumers' preferences and behaviour can be derived from data mining, and this knowledge allows digital firms to better target ads and products, supply personalised services, and increase consumer retention and loyalty. Targeted advertising in turn can increase sales and revenues for

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[1] See generally David S Evans and Richard Schmalensee, *The Matchmakers: The New Economics of Multisided Platforms* (Harvard Business Review Press 2016).

[2] Primavera De Filippi, 'Big Data, Big Responsibilities' (2014) 3 Internet Policy Review 2.

[3] Monopolkommission, 'Special Report 68: Competition Policy: The Challenge of Digital Markets' (2015) 30 <http://www.monopolkommission.de/index.php/en/reports/special-reports/284-special-report-68> accessed 9 March 2017.

marketers and merchants,[4] reduce advertisement investment that is wasted when addressed to consumers uninterested in the advertised product,[5] and reduce consumer annoyance.[6] Thirdly, based on observed behaviour, big data enables the redesign and/or improvement of services, business processes, strategies and efficiency in general (for example, big data can be used to speed up transactions and reduce the likelihood of product returns).[7] Lastly, big data has contributed to a great extent to the emergence of business models under which digital services and content are offered to consumers at zero prices.[8]

1.3 On the flipside, data-driven competition may lead to high barriers to entry, high levels of concentration and the accumulation of significant market power in the hands of a few firms. To be sure, digital markets have some characteristics which make them inherently prone to high concentration. Competition takes place *for* the market rather than *in* the market (winner-takes-all competition), there are high fixed costs and low marginal costs, there is intense investment in R&D, and network effects tend to benefit the incumbent. However, data-driven competition increases the likelihood of concentration and market power even further.

1.4 In digital markets, important data-driven effects can be appreciated:

a. Volume (scale of data) and Learning-by-doing

It is useful to illustrate the operation of these factors by taking as an example a search engine. Online search services are provided free of charge, for which reason search engines compete on the basis of quality and innovation.[9] Perhaps the most important dimension of quality is the provision of fast 'relevant' search results to users. When confronted with a given search query, the search engine must 'guess' which links the user entering the query is more likely to click on.[10]

By observing on which links a user clicks after entering a search query, the search engine is able to determine the likely relevance of the links to such user, and to rank them accordingly (i.e. moving them up or down). The more users a search engine has, the more data the search engine has at its disposal to improve the relevance of its results, and therefore the more trials its algorithms will be able to conduct to guess consumer preferences. Accordingly, there is a mutually reinforcing relationship between data, trials and quality: more data enables more

[4] CMA, 'The Commercial Use of Consumer Data – Report on the CMA's Call for Information' (2015) 50.
[5] Robert C Blattberg and John Deighton, 'Interactive Marketing: Exploiting the Age of Addressability' (1991) 33 Sloan management review 5, 8–11.
[6] At least as compared with non-targeted advertising, since targeted advertising can be perceived by consumers as less vexatious or even as informative. Monopolkommission (n 3) 31.
[7] CMA, 'The Commercial Use of Consumer Data – Report on the CMA's Call for Information' (n 4) 93.
[8] Under this business model firms ('platforms') offer consumers a free product or service on one side (the 'user side') and earn their income on the other side (the 'paying side') from selling to advertisers the ability to access these consumers with targeted behavioural ads.
[9] See generally Maurice E Stucke and Ariel Ezrachi, 'When Competition Fails to Optimize Quality: A Look at Search Engines' (2016) 18 Yale Journal of Law and Technology 70.
[10] For example, if a user enters the query 'Beatles', the search engine must guess whether the user is looking for the band, the Volkswagen car, or the insect.

trials, thereby leading to enhanced quality, and greater quality, in turn, attracts more users, in a positive feedback loop that strengthens the incumbents' position.

These effects are not exclusive to search engines. As the OECD noted:

"[t]he accumulation of data can lead to significant improvements of data-driven services which in turns can attract more users, leading to even more data that can be collected […]For example, the more people use services such as Google Search, or recommendation engines such as that provided by Amazon, or navigation systems such as that provided by TomTom, the better the services as they become more accurate in delivering requested sites and products, and providing traffic information, and the more users it will attract."[11]

b. Variety (scope of data)

Depending on the use to which data is put, the scope of data may be as important as its scale.[12] The integration of data from different sources may significantly increase the value of the dataset.[13] For example, going back to the search engines, to deliver relevant results in response to queries a search engine has never seen before, data from different sources may be required. Relevance of results returned to a query consisting in a specific product model number, for instance, can depend on whether the search engine has 'crawled' web pages containing that exact model number, or whether such data is obtained from other sources such as product data feeds from manufacturers or retailers.

If a platform offers a variety of services that collect data, economies of scope are likely to arise insofar as data linkage is possible. Linked data is a source of 'super-additive insights' and value that are greater than the sum of its isolated parts (data silos).[14]

According to the ICO, many industry players contend that the most important characteristic of big data is variety.[15] This is particularly the case in the world of AI. Writing on Facebook's digital assistant 'M', Stucke and Grunes explain that the more users rely on Facebook's other services (such as its social network platform or its WhatsApp app), the greater the variety of personal data on particular users, the better the digital assistant can segment results by user profiles, and the better the digital assistant can personalise results. They conclude:

"So the feedback loop adds a dimension: it is no longer the trial-and-error, learning-by-doing from earlier queries, but trial-and-error in predicting individual tastes and preferences from the variety of personal data the company collects across its platform (such as the person's email, geo-location data, social

[11] OECD, 'Data-Driven Innovation for Growth and Well-Being: Interim Synthesis Report' (2014) 29.
[12] Autorité de la Concurrence and Bundeskartellamt, 'Competition Law and Data' (2016) 51.
[13] Daniel L Rubinfeld and Michal S Gal, 'Access Barriers to Big Data' (2017) 59 Ariz. L. Rev. 339, 347.
[14] OECD, 'Data-Driven Innovation for Growth and Well-Being: Interim Synthesis Report' (n 11) 29.
[15] ICO, 'Big Data and Data Protection' (2014) 7 <https://ico.org.uk/media/for-organisations/documents/1541/big-data-and-data-protection.pdf>.

network, browser history) and Internet (from the cookies placed when the person visits a website). Now the digital assistant – in personalizing results – can target users with specific sponsored advertisements that they will more likely click (thereby generating more revenue for the platform operator).[16]

c. Velocity (economies of speed)

As some types of data lose its value rather quickly,[17] online platforms have the necessity to keep gathering up-to-date information about diverse events and the interests and preferences of users in order to be able to return relevant responses and deliver targeted advertising services.[18]. First access to data and the ability to process it in real-time confer a competitive advantage under certain circumstances.

If users' interests suddenly change as a consequence of a recent event, online platforms need to react rapidly and adapt to the new scenario. Having access to data flowing from the largest established user base is key for quick adaptation. As noted by Microsoft's consultant Susan Athey:

"When Michael Jackson died, for instance, there was a huge spike in internet traffic, and the search engine companies wanted to be able to figure out in the first 30 seconds to stop sending people to general pages about the performer and start sending them instead to the latest news. By using the latest data — crowd-sourcing what you want — a search engine can be a quick learner.

All search engines try to do that, but how well they do it is a function of how fast they get the data. So Google will do it faster than Bing, because more people come to Google first."[19]

Another example of 'economies of speed' is "nowcasting". Rubinfeld and Gal define nowcasting as "the capacity of a company to use the velocity at which a data set grows to discern trends well before others."[20] Nowcasting enables undertakings to make real-time forecasts (or "nowcasts") of phenomena and users' and even competitors' behaviour, and to respond more quickly accordingly.[21] This development is a double-edged sword. Nowcasting can enable the early detection of flue outbreaks,[22] and that is highly beneficial. However, what does prevent a dominant firm through nowcasting (such as watching for trends in its proprietary data from search queries, ad-serving

[16] Maurice Stucke and Allen Grunes, *Big Data and Competition Policy* (Oxford University Press 2016) 186–187.
[17] For example, current locational data is important for search queries such as "restaurants near me", but historic location data is clearly of less value in this regard.
[18] Inge Graef, 'Market Definition and Market Power in Data: The Case of Online Platforms' [2015] World Competition 38, No. 4 473, 483.
[19] Kathleen O'Toole, 'Susan Athey: How Big Data Changes Business Management' (*Stanford Graduate School of Business*, 2013) <https://www.gsb.stanford.edu/insights/susan-athey-how-big-data-changes-business-management>.
[20] Rubinfeld and Gal (n 13) 353.
[21] ibid.
[22] World Economic Forum, 'Big Data, Big Impact: New Possibilities for International Development' (2012) <http://www3.weforum.org/docs/WEF_TC_MFS_BigDataBigImpact_Briefing_2012.pdf>.

technology, mobile OS, etcetera) from monitoring new business models in real time? The dominant firm can acquire these entrants before they become significant competitive threats or use other means to thwart their growth.[23]

d. Spill-overs (network effects amplified by data-driven network effects)

As noted above, online platforms are characterised by indirect, and sometimes direct, network effects. These effects are amplified by increasing returns to scale, learning-by-doing, increasing returns to scope and economies of speed, thereby giving rise to spill-overs between the different sides of the two- or multi-sided markets on which platforms are active.

Take the example of Facebook' social networking platform. On the user side, more users increase the value of the platform to other users, thereby attracting more users and traffic. This increased number of users and traffic translates into more data. The more data users provide, the more data the social network has to carry out experiments to render more 'relevant' social network interactions and generally make its platform more attractive to users. At the same time, increased volume, variety and velocity of data help to improve ad-targeting, thereby increasing advertising revenues, and also allow for the development of new products and services that increase the platform's data collection capacity. More users and improved ad-targeting in turns attract more advertisers, thereby increasing advertising revenues even further. The data the platform collects can be processed and reprocessed for subsequent use on any side of Facebook's multi-sided market. As the OECD observes:

"The reuse of data generates huge returns to scale and scope which lead to positive feedback loops in favour of the business on one side of the market, which in turn reinforces success in the other side(s) of the market."[24]

When a platform is highly vertically integrated, spill-overs are likely to be more pronounced:

"[C]onsumers that appreciate customized search results and ads by Google's search and webmail platform will spend more time on the platform, which allows Google to gather even more valuable data about consumer behavior, and to further improve services, for (new) consumers as well as advertisers (on both sides of the market). These self-reinforcing effects may increase with the number of applications provided on a platform, e.g. bundling email, messaging, video, music and telephony as increasing returns to scope kicks in and even more information becomes available thanks to data linkage."[25]

[23] Maurice E Stucke and Allen P Grunes, 'Debunking the Myths Over Big Data and Antitrust' [2015] CPI Antitrust Chronicle 8 <https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2612562>.
[24] OECD, 'Data-Driven Innovation for Growth and Well-Being: Interim Synthesis Report' (n 11) 29.
[25] ibid.

1.5 From a competition policy perspective, the benefits and harms arising from increased concentration in digital markets depend on the choice made by policymakers as to the goal (or goals) that competition law seeks to achieve.

1.6 If a deontological view of competition is adopted, under which competition, that is, the process of rivalry between firms, is a societal value in itself worthy of protection even in cases where this process does not lead to welfare gains (*competition as a process*), then it is safe to argue that the greatest harm competition policy seeks to combat is present in a number of digital markets: a growing reduction of rivalry amongst competitors compounded by entry deterrence. This is particularly the case in advertising-funded multisided markets such as those dominated by Google and Facebook.

1.7 Take the example of Google. No other search engine has ever been close to match Google's scale of search data, and its web index is significantly more comprehensive than that of its closest competitor. In addition, no other company in the world has a similar assortment of products offered for free in exchange of personal data,[26] for which reason Google's economies of scope in data are also extremely difficult to match. Economies of scale and scope of data improve the quality of Google's algorithms as a result of learning-by-doing, thereby enabling Google to adapt more quickly to changes in consumers' preferences and interests in real-time (i.e. economies of speed). Accordingly, a quality gap between Google's search services and those of its competitors is bound to increase over time due to the operation of these effects, thereby reducing the process of rivalry in the online search market: in a scenario where one or several firms have virtually no demand and the incumbent faces an ever-increasing demand, laggards become aware that the dominant firm is in a position to provide effortlessly (i.e. as a result of the natural of operation of data-driven network effects) a service of greater quality, as a result of which the incentive to compete is significantly reduced. This reduction of rivalry impinges upon the advertising side of the market due to the operation of indirect network effects: more users on the free side attract more advertisers on the paid side, since advertisers value a larger audience to which they can target their ads. Ultimately, the operation of the effects explained in paragraph 1.4 above gives rise to a self-reinforcing positive feedback (the "virtuous cycle"):[27] as Google attracts more users with its free services (search engine, maps, YouTube, and so on), it is able to gather larger amounts of valuable user data necessary to improve its search algorithms and develop user profiles, and such user data obtained on the free side can be reprocessed and reused to better target users with targeted advertising. In turn, by being able to target users with more relevant ads, "the search engine is more likely to attract advertisers (as consumers are more likely to click on their ads) and thereby increase its advertising revenue and profits. Moreover, the search engine can target users with these personalised ads across media (such as on their personal computers, smartphones, tablets and soon, household appliances) and across services (such as texts, maps, videos, etcetera). This too increases the likelihood of consumers

[26] Google, 'Our Products' <www.google.com/about/products/>.
[27] FTC Staff, 'FTC Staff Report on Google - File No. 111-0163' 76 <http://graphics.wsj.com/google-ftc-report/>.

clicking on a relevant sponsored ad […] or seeing a display ad."[28] If Google's competitors face an almost insurmountable challenge in catching up with Google, the picture looks even grimmer for newcomers. There are significant fixed costs related to R&D and the development and maintenance of service infrastructure.[29] It has been estimated that the core code for a search engine is around 3 million lines and takes up to USD 100 million to develop, which excludes the costs of running the service.[30] Since Google became the market leader in 2002, only Microsoft with its deep pockets and after having entered into a partnership with Yahoo! has been able to make a rather minor dent on Google's market share.

1.8 Other multisided markets (i.e. non-advertising-funded) exhibit different competition dynamics but ultimately a remarkably similar outcome. Take the example of Amazon Marketplace.[31] Since its inception Amazon sought to achieve scale, always prioritising growth over profits, even if that entailed cutting prices and investing most of its revenues on expanding capacity. It invested heavily in delivery facilities, warehouses, trucks and infrastructure in general, with an aim to enhance its loyalty programme 'Amazon Prime', adding over the years an array of features such as e-books and video rentals, music and video streaming and one-hour or same-day delivery. Amazon succeeded in its quest for scale, developing at the same time a critical infrastructure for e-commerce. Over time, Amazon's competitors have become its customers: retailers that compete with it to sell goods increasingly use its Marketplace and delivery services. The dependence of Amazon's retail competitors on Amazon's infrastructure amounts to a key advantage that reduces rivalry amongst those retailers and Amazon. In addition, Amazon's critical infrastructure serves as highly effective entry deterrence, as new entrants can see how difficult it would be to replicate such infrastructure to compete effectively against Amazon. Moreover, Amazon's market power is powered by data. Buying and even browsing for e-books and any other products on Amazon Marketplace provides Amazon with information about users' reading habits, interests and preferences, data which is used by Amazon to tailor recommendations and future deals. Amazon's 'item-to-item collaborative filtering' algorithm, which is based on what a user has purchased in the past, what items are contained in a user's shopping cart, what items have been ranked and liked by the same individual, and what other customers have viewed and purchased, enables the personalisation of users' shopping experiences to a great extent. As one analyst notes, "[a] gadget enthusiast my find Amazon web pages heavy on device suggestions, while a new mother could see those same pages offering up baby products".[32] Amazon's retail competitors and other ecommerce platforms with a smaller user base do not have access to that data to boost their sales, and

[28] Stucke and Ezrachi (n 9) 88.
[29] Ioannis Lianos and Evgenia Motchenkova, 'Market Dominance and Quality of Search Results in the Search Engine Market: Analysis of Exploitative and Exclusionary Abuses' [2012] CLES Working Paper series 2/2012 4.
[30] Rufus Pollock, 'Is Google the next Microsoft: Competition, Welfare and Regulation in Online Search' (2010) 9 Review of Network Economics 1, 26.
[31] For a detailed discussion of anticompetitive concerns relating to Amazon see Lina M Khan, 'Amazon's Antitrust Paradox' (2016) 126 The Yale Law Journal 564.
[32] JP Mangalindan, 'Amazon's Recommendation Secret' (2012) *Fortune* <http://fortune.com/2012/07/30/amazons-recommendation-secret/>.

therefore find it more difficult to compete against Amazon.[33] Also, there is evidence that Amazon uses its Marketplace "as a vast laboratory to spot new products to sell, test sales of potential new goods and exert control over pricing",[34] to the detriment of retail competitors. Amazon can use the sales data derived from merchants that use its Marketplace to make business decisions, giving its own items featured placement under searches carried out on its platform. For example, a merchant selling Pillow Pets (stuffed-animal pillows modelled after NFL mascots[35]) on Amazon Marketplace used to sell up to one hundred pillows per day; however, at some point the merchant realised that Amazon had itself begun to offer the same Pillow Pets for the same price, giving its own listing featured placement on its platform.[36] Similarly, a manufacturer that had been selling an aluminium laptop stand on Amazon Marketplace for several years suddenly saw a similar stand on Amazon Marketplace for half the price. The seller was Amazon, under its AmazonBasics brand.[37] According to one analyst, it is apparent that Amazon has been using "insights gleaned from its vast Web store to build a private-label juggernaut that now includes more than 3,000 products."[38] As a result, the merchant's sales dropped to twenty per day.[39] Consequently, competition in retail markets and ecommerce platform markets is significantly reduced: firstly, at the retail level, merchants need to be visible online to sell their products, for which reason they resort to Amazon Marketplace, the largest ecommerce platform, knowing at the same time that Amazon at any point may use the data it has collected from merchants' sales on Amazon Marketplace for its own benefit, and to their immediate detriment. Secondly, at the platform level, as a result of the valuable transactional and other data Amazon is able to collect from its Marketplace, Amazon can boost its sales, make its platform more attractive, and fuel the 'virtuous cycle' explained in paragraph 1.4 above.

1.9 Conversely, if a utilitarian view of competition is adopted, under which competition is a 'means to an end',[40] only worthy of protection insofar as it renders efficient outcomes beneficial to consumers (i.e. consumer welfare), then benefits and harms can be identified from high concentration in digital markets.

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[33] 'Given that attracting traffic and generating sales as an independent online retailer involves steep search costs, the vast majority of online commerce is conducted on platforms, central marketplaces that connect buyers and sellers. Thus, in practice, successful entry by a potential diaper retailer carries with it the cost of attempting to build a new online platform, or of creating a brand strong enough to draw traffic from an existing company's platform. As several commentators have observed, the practical barriers to successful and sustained entry as an online platform are very high, given the huge first-mover advantages stemming from data collection and network effects.' Khan (n 31) 772.

[34] Greg Bensinger, 'Competing With Amazon on Amazon' *Wall Street Journal* (27 June 2012) <https://www.wsj.com/articles/SB10001424052702304441404577482902055882264>.

[35] ibid.

[36] ibid.

[37] Khan (n 31) 782.

[38] Spencer Soper, 'Got a Hot-Seller on Amazon? Prepare for e-Tailer to Make One Too - Business News | The Star Online' <https://www.thestar.com.my/business/business-news/2016/04/30/got-a-hotseller-on-amazon-prepare-for-etailer-to-make-one-too/>.

[39] Bensinger (n 34).

[40] Neelie Kroes, 'Press Release - "Global Europe - Competing and Cooperating"' (October 2007) <http://europa.eu/rapid/press-release_SPEECH-07-618_en.htm?locale=en>.

1.10 It was explained in paragraph 1.4 that data-driven effects benefit the incumbent, almost in an organic fashion. As a result of increased concentration of data, incumbent platforms are able to provide higher-quality services, as compared to those of their competitors. For example, more data enables the provision of more 'relevant' search results, as well as more accurate ad-targeting, to the benefit of users and advertisers. Importantly, digital giants such as Google and Facebook have championed business models under which users enjoy search, social network and a plethora of other services at zero prices (as they derive the majority of their revenues from advertisers). Lower prices are normally seen as the main benefit consumers can derive from competition. The enjoyment of free digital products, the argument runs, is probably the greatest benefit accruing for consumers in digital markets that could have ever been conceived.[41]

1.11 However, as the quality of their services depend on the volume and quality of data, digital platforms have a natural incentive to collect and process as much data as they can, even if that entails the violation of applicable privacy/data protection regulatory frameworks. Both Google[42] and Facebook[43] have been found in a number of countries to have violated the data protection rules, and it is a very well-documented fact that platforms are constantly deploying their efforts to get as much data as possible.[44] This 'hunger for data' has given rise to diverse privacy scandals around the world,[45] and consequently to an increased

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[41] '[I]t's really hard to see the above-marginal-cost pricing in these [digital] markets. From the point of view of the buyers… these monopolists are really pathetic at extracting profits, as most of them give away their products for free' Joshua Wright and Geoffrey Manne, 'What's An Internet Monopolist? A Reply to Professor Wu' (*Technology Liberation Front*, 23 November 2010) <https://techliberation.com/2010/11/23/whats-an-internet-monopolist-a-reply-to-professor-wu/> accessed 30 May 2017.

[42] See *inter alia* Information Commissioner's Office, 'Google to Change Privacy Policy after ICO Investigation' (15 April 2016) <https://ico.org.uk/about-the-ico/news-and-events/news-and-blogs/2015/01/google-to-change-privacy-policy-after-ico-investigation/>; Agencia Española de Protección de Datos, 'Agencia Española de Protección de Datos Sanciona a Google Por Vulnerar Gravemente Los Derechos de Los Ciudadanos' <http://www.agpd.es/portalwebAGPD/revista_prensa/revista_prensa/2013/notas_prensa/news/2013_12_19-ides-idphp.php>; Garante per la Protezione dei Dati Personali, 'Decision Setting Forth Measures Google Inc. Is Required to Take to Bring the Processing of Personal Data under Google's New Privacy Policy into Line with the Italian Data Protection Code'. <http://www.garanteprivacy.it/web/guest/home/docweb/-/docweb-display/docweb/3295641>;

[43] See for example 'Facebook Settles FTC Charges That It Deceived Consumers By Failing To Keep Privacy Promises' (*Federal Trade Commission*, 29 November 2011) <https://www.ftc.gov/news-events/press-releases/2011/11/facebook-settles-ftc-charges-it-deceived-consumers-failing-keep>.

[44] "For its app to function, Uber doesn't need to continuously monitor your location. It doesn't need to know who all of your friends, family, and co-workers are, as well as anyone else listed among your contacts. Nor does Uber have to allow others to track you across the web, including when you visit Uber's website. So what explains Uber's actions? Here again the answer is data." Ariel Ezrachi and Maurice Stucke, *Virtual Competition* (Harvard University Press 2016) 167 <http://www.hup.harvard.edu/catalog.php?isbn=9780674545472> accessed 28 February 2017.

[45] Such as the Google Street View Scandal and the more recent Cambridge Analytica scandal. See Sanctions were imposed in *inter alia* the US, Italy, Korea, Germany, the UK and France. See 'Google Pays Fine for Italy Privacy Breach' (3 April 2014) <http://www.dailytelegraph.com.au/news/breaking-news/google-pays-fine-for-italy-privacy-breach/news-story/a15cb38e7cb45e3632e3c44b3db778e0> accessed 6 March 2017; The Korea Herald, 'Google Fined W210m for Data Gathering' (28 January 2014) <http://www.koreaherald.com/view.php?ud=20140128001166> accessed 6 March 2017; Josh Halliday, 'Google Told to Delete Street View Payload Data or Face UK Prosecution' *The Guardian* (21 June 2013) <https://www.theguardian.com/technology/2013/jun/21/google-street-view-payload-data> accessed 6 March 2017; 'Google Fined 145,000 Euros Over Wi-Fi Data Collection in Germany' *Bloomberg.com* (22

sense of unease on the part of web users as a result of pervasive online tracking and collection of their personal data. For example, BEUC, a Europe-wide consumer protection organisation, has noted that 70% of EU consumers are worried about how their data is being collected and processed.[46] Similarly, a survey conducted by the European Commission found that disclosing personal data is a big issue for 63% of respondents at EU level, and for 67% of UK respondents.[47] Relatedly, a survey prepared by the ICO found that the protection of personal data is a top three concern amongst social issues for 21% of respondents.[48]

1.12 Consequently, there have been efforts on the part of innovative startups to satisfy a growing latent demand for privacy-friendly online products and services, but they have faced either insurmountable barriers to entry and/or exclusionary practices by incumbents. For example, DuckDuckGo, the search engine that does not track users, has found it very difficult to launch a serious challenge against Google partly due to its lack of access to data in a sufficient scale and scope, and also partly due to exclusionary practices by Google in the online search market.[49] In addition, some online platforms have engaged in unfair commercial practices and omissions that prevent consumer from making an informed choice in digital markets. In particular, it has been documented in respect of Facebook that "users are able to choose from several granular settings which regulate access by other individuals, but cannot exercise meaningful control over the use of their personal information by Facebook or third parties. This gives users a false sense of control."[50] Put in other words, the manner in which users are presented with control options regarding their personal data is deceptive. Indeed, Facebook's privacy settings have prompted diverse complaints with the US Federal Trade Commission, on the grounds that they are "designed to confuse users and to frustrate attempts to limit the public disclosure of personal information that many Facebook users choose to share

April 2013) <https://www.bloomberg.com/news/articles/2013-04-22/google-fined-145-000-euros-over-wi-fi-data-collection-in-germany> accessed 6 March 2017; Mimosa Spencer and Ruth Bender, 'Google Fined in France Over Street View' *Wall Street Journal* (21 March 2011) <http://www.wsj.com/articles/SB10001424052748703858404576214531429686752> accessed 6 March 2017; 'Attorney General: Attorney General Announces $7 Million Multistate Settlement With Google Over Street View Collection of WiFi Data' <http://www.ct.gov/ag/cwp/view.asp?Q=520518&A=2341> accessed 6 March 2017. On the Cambridge Analytica Scandal see 'Cambridge Analytica Scandal: the biggest revelations so far' (*The Guardian,* 2018) <https://www.theguardian.com/uk-news/2018/mar/22/cambridge-analytica-scandal-the-biggest-revelations-so-far>

[46] BEUC, 'Supplementary Written Evidence (OPL0068) – Online Platforms and the EU Digital Single Market, BEUC Additional Comments" (2015) <http://data.parliament.uk/writtenevidence/committeeevidence.svc/evidencedocument/eu-internal-market-subcommittee/online-platforms-and-the-eu-digital-single-market/written/25081.html>.

[47] European Commission, "Special Eurobarometer 359: Attitudes on Data Protection and Electronic Identity in the European Union" (the "EC Survey") (2011) Tables section, 15.

[48] ICO, "Annual Track 2014" (2014) 10.

[49] The European Commission recently fined Google for abuse of dominant position to strengthen its market power in online search. See European Commission, 'Press Release - Antitrust: Commission Fines Google €4.34 Billion for Illegal Practices Regarding Android Mobile Devices to Strengthen Dominance of Google's Search Engine' (18 July 2018) <http://europa.eu/rapid/press-release_IP-18-4581_en.htm>.

[50] Brendan Van Alsenoy, Valerie Verdoodt, Rob Heyman, Ellen Wauters, Jef Ausloos and Gunes Acar, 'From Social Media Service to Advertising Network: A Critical Analysis of Facebook's Revised Policies and Terms' (2015) Report commissioned by the Belgian Data Protection Authority 22.

only with family and friends".[51] As a result, there is misinformation and distrust in the marketplace: some consumers use online services based on incorrect knowledge motivated by deceit, and other consumers learn that undertakings will prioritise revenues over privacy protection, so they assume there is no privacy protection to begin with (where in practice, some firms are differentiating themselves to fulfil the needs of privacy-sensitive consumers).

1.13 In view of the above, in digital markets there are two interrelated concerns. Firstly, there is a 'data race' in which digital platforms compete to gather the greatest amount of data possible to reinforce their position. Naturally, on account of the effects described in paragraph 1.4, market leaders are best positioned to win this race, especially when they violate the applicable data protection rules. Doing this is an affordable activity, as they can pay a negligible fine and derive huge profits from the additional data streams they unlawfully obtain.[52] As a consequence, barriers to entry are raised in digital markets. Secondly, digital markets reach a 'dysfunctional equilibrium'[53]: if some consumers make transactional decisions as to whether or not to use an online service based on incorrect information, they cannot make correct assessments as to whether the privacy protection offered by a platform is consistent with their privacy preferences. If another portion of consumers distrusts platforms' and firms' claims about the privacy protection they offer, such consumers will not make transactional decisions based on privacy protection. Consequently, privacy-protection cannot emerge as a meaningful non-price parameter competition, in spite of the high latent demand for privacy-friendly services. These two concerns translate into a negative impact upon the competition parameter 'choice', to the detriment of consumers.

1.14 In addition, the concentration of data in the hands of one firm on a given industry segment increases the inherent tendency of high-tech markets to 'tip'. In a tipped market, the incentives for both the dominant firm and the laggards to further invest in innovation are significantly reduced. According to Prufer and Schottmuller, this is because in a stable state where one or a number of firms have virtually no demand and the incumbent has virtually full demand, laggards know that the dominant firm is able to offer consumers both higher quality and lower marginal costs of innovation (due to its larger troves of user data).[54] The latter feature enables the dominant firm to match any innovative activities of its competitors at lower marginal innovation costs, thereby being able to keep its quality advantage.[55] As a consequence, the laggards' incentives to innovate are reduced (as they know they cannot match the quality of the incumbent), and so are the incentives of the dominant firm (as it knows it does

[51] EPIC, 'In the Matter of Facebook, Inc., Complaint, Request for Investigation, Injunction and Other Relief' (2010) 16 <https://epic.org/privacy/facebook/EPIC_FTC_FB_Complaint.pdf>.
[52] Adam Clarke, 'Google's Privacy Violations Are More Affordable Than You Think' (*Motherboard*, 2013) <https://motherboard.vice.com/en_us/article/pgg9qy/googles-privacy-violations-are-more-affordable-than-you-think>.
[53] Joseph Farrell, 'Can Privacy Be Just Another Good' (2012) 10 J. on Telecomm. & High Tech. L. 251, 259.
[54] Jens Prufer and Christoph Schottmüller, 'Competing with Big Data' [2017] Tilburg Law School Research Paper No. 06/2017 2 <https://papers.ssrn.com/abstract=2918726>.
[55] ibid.

not have to keep innovating to retain its leadership). Accordingly, the parameter of competition 'innovation' is impaired, to the detriment of consumers.

1.15 There are other manifestations of reduction of consumer choice. Google's advertising product AdWords has proved impressively popular amongst advertisers, since it yields optimal return on investment. Advertisers bid for keywords (for example, 'computers', 'Apple' and 'Apple computers') in order to be assigned a given place in the search engine results page ('SERP'), and pay only when a user clicks on an ad (i.e. they are charged on a cost-per-click basis). In its inception, costs-per-click were affordable, costing pences instead of pounds, for which reason vendors across many segments were able to place bids. Things changed over time. Currently, "a startup or new business is dropping $5 or more per click to get people to visit their site",[56] and increased traffic, albeit positive, does not guarantee customers. Because AdWords has become increasingly expensive, most small businesses and startups cannot compete with larger companies for good slots in the SERP. Given that large companies have a steady cash flow, they can afford to spend substantial amounts of money per month on an AdWords campaign. Accordingly, by the time a startup is taking off, all of the keywords relevant to its product have been already taken, which in turn raises the AdWords campaign price. For example, a skincare startup can have a great product and brand message, but major companies such as L'Oreal and Estee Lauder almost certainly already locked down keywords such as 'moisturizer', which means that the startup would have to spend around £4-£6 per click for such keyword.[57] Accordingly, only firms with financial power get to become visible on Google search, which effectively reduces the alternatives for consumers looking for products and services on Google's search engine and related properties.

1.16 Online retail is also affected by a trend towards reduced consumer choice. Amazon has expanded onto almost every retail segment, and its Marketplace does not stop growing steadily. In the US, retail giants such as Walmart, Sears and Macy have attempted to boost their online operations, but they have not succeeded in winning back market share.[58] In addition, since attracting traffic and driving sales as an independent online retailer involves steep search costs, the overwhelming majority of online commerce is conducted on platforms, and increasingly on Amazon Marketplace.[59] Accordingly, consumers are being progressively deprived of variety of online retail outlets, which entails reduced choice in terms of *inter* alia aftersales services, customer support, shipping alternatives and protection of personal data.

2. What are the emerging benefits and harms of the same small number of digital firms becoming present across a broad range of digital markets?

[56] John Rampton, '5 Reasons You Shouldn't Use AdWords' (*Forbes*, 7 July 2014) <https://www.forbes.com/sites/johnrampton/2014/07/07/5-reasons-you-shouldnt-use-adwords/>.
[57] ibid.
[58] Lauren Thomas, 'This Chart Shows How Quickly Amazon Is "Eating the Retail World"' (7 July 2017) <https://www.cnbc.com/2017/07/07/amazon-is-eating-the-retail-world.html>.
[59] Khan (n 31) 772.

2.1 The answer to this question also depends on the choice made by policymakers as to the goal (or goals) that competition law seeks to achieve.

2.2. Under the competition-as-a-process approach, only harms can be identified: widespread reduction of rivalry in many related online (and increasingly offline) segments, and concentration of financial and market power in the hands of a few firms.

2.3 As a result of economies of scope (see above paragraph 1.4), user data collected in one market (for example, in the search engine market) can be used to improve quality in another market (for example, in the search advertising market). Where the same data can be used in two or more markets, an incumbent can benefit from a 'domino effect': it can leverage its dominant position in market A, which is derived from its data-advantage, to cause a connected market B to tip, even where market B is already served by traditional incumbent firms.[60] There are numerous examples of this trend. For instance, as a result of its dominance in the market for online search Google was able to identify data that was useful for the digital maps market. Google Maps soon became the market leader after Google expanded onto this segment, quickly displacing the theretofore-market leader MapQuest.[61] Google repeated this move in many 'vertical' segments, such as travel, local and shopping, having been recently fined by the European Commission for abusing its dominant position with its own comparison shopping service.[62] Additionally, data-linkage has enabled Google to extend its dominance in online search onto numerous related online segments, such as mobile operating system (Android), web browser (Chrome), email service (Gmail), video streaming site (YouTube), mapping service (Google Maps), website analytics tool (Google Analytics), cloud platform service (Google Apps), display advertising technology (DoubleClick and AdMob). Therefore, numerous online markets are dominated by one firm, a scenario that is inconsistent with a competition policy that seeks to keep markets open and ensure entry and exit dynamism. Worse still, data that is collected online can be used as an input to gain dominance in other 'offline' markets. For instance, mapping data is of the essence for the development of autonomous cars.[63] Google already has mapping technology (Google Maps), in addition to the crowd-sourcing app Waze, which provides real-time traffic, accident and police information. As a result of increased use of these services Google is able to improve its mapping technology, thereby gaining the upper hand in the race for the development of self-driving cars. Indeed, this may be one of the reasons

[60] Prufer and Schottmüller (n 54) 3.
[61] See Consumer Watchdog.org, 'Traffic Report: How Google Is Squeeinzg Out Competitors and Muscling into New Markets' (2010) A study by Inside Google.
[62] European Commission, 'European Commission - PRESS RELEASES - Press Release - Antitrust: Commission Fines Google €2.42 Billion for Abusing Dominance as Search Engine by Giving Illegal Advantage to Own Comparison Shopping Service' (2017) <http://europa.eu/rapid/press-release_IP-17-1784_en.htm> accessed 7 August 2017.
[63] 'We will only be able to have self-driving vehicles on the highway in 2020 with highly accurate maps.' NTT Data, 'Automotive 4.0 - Sensing the Road Ahead for Tier 1 Suppliers' (2015) 11 <https://emea.nttdata.com/uploads/tx_datamintsnodes/Whitepaper_Automotive_Tier1_final_single.pdf>.

why Google's self-driving technology division (Waymo) "is widely considered to be the front-runner among companies developing autonomous technology."[64]

2.4 As a consequence of the 'domino effect' explained above, insurmountable barriers to entry are likely to arise. Any entrant that wishes to compete in an online platform market (for example, in a search engine, social network or App store market) must build a platform capable of providing services having the ability to compete with those of the incumbent. Setting up a platform demands high investments in R&D. For example, FTC Staff found that search and search advertising platforms "require enormous investments in the technology and infrastructure required to crawl and categorize the entire Internet", noting that Microsoft invested in 2010 more than USD 4.5 billion to develop its algorithms and building the physical capacity necessary to operate Bing.[65] In addition, the collection, storage, processing and analysis of user data involves substantial fixed costs and low or negligible marginal costs,[66] which means that established firms have cost advantages over entrants in this regard. But setting up the platform is not enough. To launch an effective challenge (and therefore to have access to the data necessary to compete), competitors must be able to attract a sufficiently large user base. To this effect, they must basically develop an infrastructure capable of matching that of the incumbent. For example, any company intending to launch a serious challenge against Google in the search market cannot just rely on search query data. Rather, it must find the way to gather data from other sources, especially browsing and locational data, in order to give rise to economies of scope and thereby enhance the quality of its search results. Not even Microsoft with its deep pockets has been able to achieve that.

2.5 Something remarkably similar has occurred in the ecommerce segment. By embarking upon a strategy of sustaining losses and investing aggressively at the expense of profits, and integrating across multiple business lines aided by the data it has been able to collect and process,[67] Amazon was able to create an infrastructure that cemented its far-reaching dominance. In addition to being a retailer, Amazon is an advertiser, delivery and logistics network, a payment service, a credit lender, an action house, a book publisher, a producer of TV shows and films, a fashion designer, a hardware manufacturer and vendor and a leading provider of cloud services. Important synergies derived from data-driven economies of scale and scope enable Amazon to optimise its operations in all of the business segments above, synergies which competitors in individual segments cannot possibly match. In order to compete effectively against Amazon, taken as a whole, any entrant would have to invest heavily on each of such segments. In addition, Amazon avails itself of data to make strategic business decisions. For example, it was explained in paragraph 1.8 that Amazon has used sales data gathered from Amazon Marketplace to sell products that have proved successful and popular. It has been reported that Amazon has begun selling 25% of the top items first sold by Marketplace vendors in the women's

[64] Annie Palmer, 'Looks Like Apple Just Killed the ICar' (*TheStreet*, 2017) <https://www.thestreet.com/story/14281269/1/apple-switches-gears-on-its-self-driving-car-ambitions.html> accessed 25 August 2017.
[65] FTC Staff (n 27) 76.
[66] CMA, 'The Commercial Use of Consumer Data – Report on the CMA's Call for Information' (n 4) 75.
[67] Khan (n 31) 746–747.

clothing retail segment.[68] In this way, Amazon circumvents the initial costs and uncertainties surrounding the introduction of new products and sells products which are a proven success, to the direct detriment of those vendors who assumed the initial risk. Accordingly, Amazon exploits advantages arising from vertical integration; in particular, the very fact that some of its customers are also its competitors. Relatedly, it has been reported that Amazon has had recourse to insights derived from its cloud computing service to make investment decisions.[69] Amazon can tell which cloud customers need more server capacity, thereby obtaining clues as to the business and technologies that are gaining tractions, clues that venture capital firms do not have.[70] Aided by data, Amazon can safely and successfully expand onto many segments, thereby consolidating its dominance and financial strength and distorting the competitive process, as competitors without data cannot match Amazon's data-related advantage and likelihood of success in business expansion.

2.6 Under the consumer welfare approach to competition policy, it could be argued that the benefits set out in paragraph 1.2 are amplified as a result of data-driven efficiencies, to the benefit of consumers. However, it is questionable whether the only way to achieve such efficiencies is through increased concentration of data in the hands of, and expansion onto multiple segments by a few firms. Mandated data-sharing is advocated by some as one way to open digital markets and reduce their concentration levels,[71] and this measure would not impair (if anything, it could enhance) the efficiencies that are derived from data gathering and mining.

2.7 In addition, presence of the same tech giants across many industries has deleterious effects on consumer choice. Take the example of Android. As Google SVP & General Counsel noted: "[o]f course while Android is free for manufacturers to use, it's costly to develop, improve, keep secure, and defend against patent suits. We provide Android for free, and offset our costs through the revenue we generate on our Google apps and services we distribute via Android".[72] Through a zero-price and cross-subsidy strategy, Google has effectively used Android to protect its dominance in the online search market[73] and foreclose the market for licensable mobile OS. Android's competitors such as Symbian, Windows, Blackberry and others could not endure Google's data-driven, zero-price-based style of competition,[74] since they did not have the required infrastructure, access to data, and/or financial strength to compete on

[68] Soper (n 38).
[69] Based on these insights, Amazon has invested in startups Yieldex, Sonian, Engine Yard and Animoto, among others. See 'FEATURE-Amazon Finds Startup Investments in the "Cloud"' *Reuters* (9 November 2011) <https://www.reuters.com/article/amazon-cloud/feature-amazon-finds-startup-investments-in-the-cloud-idUSN1E7A727Q20111109>.
[70] ibid.
[71] Prufer and Schottmüller (n 54).
[72] Kent Walker, 'Android's Model of Open Innovation' (*Google*, 20 April 2016) <https://www.blog.google/around-the-globe/google-europe/androids-model-of-open-innovation/>.
[73] European Commission, 'Press Release - Antitrust: Commission Fines Google €4.34 Billion for Illegal Practices Regarding Android Mobile Devices to Strengthen Dominance of Google's Search Engine' (n 49).
[74] Jeff Dunn Insider Business, 'There's No Hope of Anyone Catching up to Android and IOS' (*Business Insider*, 22 August 2016) <http://uk.businessinsider.com/smartphone-market-share-android-ios-windows-blackberry-2016-8>.

these terms. In turn, Android secured Google's access to a permanent and valuable stream of data from Android users, which strengthens its dominance in the online search market. As a consequence, there are no credible alternatives to Google search, and if consumers do not want to use Android (for example, given its data protection policy), they are only left with Apple's iOS.

2.8 Consumer choice has also been impaired through other routes. As explained in paragraph 1.11, consumers are increasingly worried about the protection of their personal data, and want more privacy-friendly options. However, privacy protection is the kryptonite of online advertising-funded business models. Mergers and acquisitions have proved very successful to quash this threat. Think of WhatsApp's 1-dollar-a-user subscription fee business model that sought to protect users' privacy. When acquired by Facebook in 2014, WhatsApp had a business model that was not designed for fast revenue growth, only user growth. Its business model consisted of providing a free service for a year and then charging an annual 1-dollar subscription fee thereafter. WhatsApp had an aversion to adopting an advertising model for a social messenger service, because WhatsApp founders were especially committed to protecting user privacy given the 2013 mass surveillance revelations in the Edward Snowden affair. After WhatsApp's acquisition by Facebook, the latter amended WhatsApp's privacy policy to allow data to be shared with Facebook,[75] to the detriment of those consumers who prefer higher levels of data protection.

2.9 Another example of reduced consumer choice can be seen from Amazon's expansion efforts. As explained in paragraph 2.5, Amazon is both a book publisher and marketer. Consequently, it can produce and promote its own content on Amazon Marketplace, to the detriment of publishers that offer their content on that platform. This advantage has put pressure on booksellers and publishers, thereby spurring consolidation amongst them in the US.[76] This trend has had deleterious effects on both authors and readers, "leaving writers with fewer paths to market and readers with a less diverse marketplace". [77] Additionally, given book publishers' dependence on Amazon Marketplace, Amazon is able to impose higher fees on them, thereby affecting publishers' business model in a way that impairs consumer choice even further, as publishers are less able to invest in a range of books. Publishers have reportedly responded to Amazon's fees by both publishing fewer titles and focusing mainly on books by celebrities and bestselling authors, as a result of which readers are "presented with fewer books that espouse unusual, quirky, offbeat, or political risky ideas, as well as books from new and unproven authors."[78]

2.10 Last but not least, vertical integration enhances the incentive and ability to engage in exclusionary conduct. By the late 2000s and early 2010s, in response to the challenge posed by vertical search, Google began to make copies of the most successful specialised search engines like Kayak, Foundem and Yelp

[75] Tas Bindi, 'WhatsApp, Facebook to Face EU Data Protection Taskforce' (*ZDNet*, 27 October 2017) <https://www.zdnet.com/article/whatsapp-facebook-to-face-eu-data-protection-taskforce/>.
[76] Khan (n 31) 766.
[77] ibid.
[78] Letter from Authors United to Willian J. Baer, Assistant Attorney General, Antitrust Division, Department of Justice (14 July 2015), quoted in ibid 767.

(leading to Google Travel, Google Shopping and Google Local). Since the 'clones' were not as popular and successful with users as the original vertical search engines, Google introduced what was called 'universal search'. In a nutshell, universal search displayed links to Google's own vertical search services in a more advantageous manner than to its competitors, thereby effectively diverting traffic from Google's vertical competitors to its own versions of those companies.[79] The European Commission recently imposed a €2.42 billion fine on Google on this account.[80] Relatedly, the European Commission also imposed a €4.34 billion fine on Google for having "used Android as a vehicle to cement the dominance of its search engine".[81] In particular, Google required manufacturers to pre-install the Google Search app and browser app (Chrome), as a condition for licensing Google's app store (the Play Store); made payments to certain large manufacturers and mobile network operators on condition that they exclusively pre-installed the Google Search app on their devices; and prevented manufacturers wishing to pre-install Google apps from selling even a single smart mobile device running on alternative versions of Android that were not approved by Google (so-called "Android forks").[82] Amazon has also availed itself of its infrastructure to engage in exclusionary conduct that distorts the competitive process. For example, sellers who use Amazon's delivery system have more chances of being listed higher on Amazon search results than those who do not, which means that Amazon conditions its search engine results on Amazon Marketplace on whether such sellers also use Amazon's delivery business.[83]

3. What effect can the accumulation and concentration of data within a small number of big firms be expected to have on competition?

3.1 Firstly, the data-driven effects described in paragraph 1.4, coupled with the inherent characteristics of high-technology markets, naturally lead to highly concentrated markets.

3.2 The effects of high levels of concentration were addressed in the two answers above. A big data advantage is likely to raise barriers to entry and reduce rivalry (paragraphs 1.6-1.8).

3.3 In particular, the concentration of data in the hands of one firm on a given market increases the likelihood that such market 'tips' and reduces incentives to innovate (paragraph 1.14).

[79] Michael Luca and Tim Wu, 'Is Google Degrading Search? Consumer Harm from Universal Search' [2015] Working Paper, Harvard Business School.
[80] European Commission, 'European Commission - PRESS RELEASES - Press Release - Antitrust: Commission Fines Google €2.42 Billion for Abusing Dominance as Search Engine by Giving Illegal Advantage to Own Comparison Shopping Service' (n 62).
[81] European Commission, 'Press Release - Antitrust: Commission Fines Google €4.34 Billion for Illegal Practices Regarding Android Mobile Devices to Strengthen Dominance of Google's Search Engine' (n 49).
[82] ibid.
[83] Khan (n 31) 779.

3.4 Also, the 'data race' that characterises data-driven markets enables cross-subsidisation within an incumbent's ecosystem and prevents the introduction of new business models. Small entrants cannot charge positive prices for their products, as they know that tech giants offer them for free (think for example digital maps, or mobile OS). Therefore, the data-mining-based business model becomes the norm. Such business model, in turn, prevents entry by small players and secures a permanent and reliable flow of data for dominant firms, which they subsequently use to strengthen their market power in their core segments and leverage market power onto other markets. This dynamic is likely to give rise to a 'domino effect' (paragraph 2.3). To leverage their market power, dominant firms can avail themselves of their technologies to favour their services (paragraph 2.10), use their 'nowcasting' radar to identify competitive threats (paragraph 1.4) or use any other means to consolidate their dominance and extend their reach (such as mergers, see paragraph 2.8)

3.4 The consolidation of the data-driven, zero-price business model impinges upon consumer choice. As seen in paragraph 1.11, a significant amount of consumers want more privacy protection online, but privacy protection is the antithesis to this very lucrative business model. In order to secure the permanent flow of data, and therefore the raw material necessary to generate revenues, dominant firms have the incentive and ability to quash any threat stemming from entrants that intend to differentiate themselves in terms of privacy protection (paragraphs 1.12 and 2.8). Accordingly, the emergence of privacy protection as an actual non-price parameter of competition is prevented, to the detriment of consumer choice.

3.5 Relatedly, the consolidation of the data-driven business model translates into an incentive for dominant firms to violate the applicable data protection/consumer protection rules to have access to more data and solidify their dominance (paragraph 1.11), thereby making it even more difficult and less economically feasible for potential competitors to challenge the incumbent.

4. How can risks and detriment to consumers in products and services that are "free" to consumers (or paid for through their data) be assessed? And how could competition effects in other markets such as advertising be addressed?

4.1. When products and services are offered at zero-prices to consumers (i.e. they pay for them through the provision of personal data), the supplier is, in the great majority of the cases, a platform in a multisided market (paragraph 1.1). The feature 'multisidedness' has important implications for market definition and market power assessment.

4.2 The first question that arises when defining multisided markets is whether one should include both sides of the platform in the market definition or just one side.[84] To answer this question, van Damme et al. proposed a dual distinction

[84] David S Evans and Michael D Noel, 'The Analysis of Mergers That Involve Multisided Platform Businesses' (2008) 4 Journal of Competition Law and Economics 663, 674.

of multisided markets:[85] on the one hand, there are transaction markets, characterised by the presence and observability of a direct transaction between two groups of platform users.[86] This is the case of payment card systems or online marketplaces. On the other hand, there are non-transaction markets, which are characterised by the absence of direct transactions between two different groups of customers, as in the case of advertising-supported media platforms (like Google and Facebook).[87]

4.3 According to Filistrucchi et al., whether one should define a single market or two interrelated markets depends on whether we are dealing with a two-sided transaction market or a two-sided non-transaction market: in non-transaction markets, multiple relevant markets should be defined for each side of the platform, whereas in transaction markets only one market should be defined.[88]

4.4 It is submitted that the distinction above should be followed, as it is both sound and grounded in economic reality. Indeed, in the case of transaction markets, a platform is "either on both sides of the market or on none",[89] whereas in non-transaction markets a product can be in the relevant market on one side but not on the other. For example, an auction platform such as eBay must be on both the buyer and seller side or on neither side, since a transaction between a buyer and a seller takes places on eBay (using both sides) or does not take place on eBay at all.[90] Conversely, in the case of advertisement-supported platforms, it is highly unlikely that users regard Google and Facebook as substitutes (since broadly speaking users resort to Google to find information on the Internet whist they use Facebook to interact online with their friends and acquaintances), whereas it is at least possible that some advertisers regard search and social network advertising as substitutes.

4.5 Moreover, platforms are characterised by interdependence and interactions between their multiple sides, since increased participation on one side attracts more participation on the other side(s). Capturing the peculiar relationship between the different sides is a crucial step for product market definition, given that "absent recognition of such peculiarity, the risk is that an authority overlooks the important consequences than an apparently innocuous alteration

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[85] Eric Van Damme and others, 'Mergers in Two-Sided Markets – A Report to the NMa' (2010) <https://www.acm.nl/download/documenten/nma/NMa_Two-Sided_Markets_-_Report_-_16_July_2010.pdf>.

[86] Lapo Filistrucchi and others, 'Market Definition in Two-Sided Markets: Theory and Practice' (2014) 10 Journal of Competition Law & Economics 293, 298.

[87] The distinction between transaction and non-transaction platforms is to some extent equivalent to Evans and Noel's distinction between '"symmetric' MSPs, which are defined as MSPs that serve coincident sides and 'asymmetric' MSPs which are defined as MSPs that do not have at least one side in common. See David S Evans and Michael D Noel, 'Defining Markets That Involve Multi-Sided Platform Businesses: An Empirical Framework with an Application to Google's Purchase of DoubleClick' [2007] SSRN paper <https://papers.ssrn.com/sol3/papers.cfm?abstract_id=1027933>.

[88] Filistrucchi and others (n 86) 301–302.

[89] ibid 301.

[90] In the end, defining a single market implies defining the market for services to a transaction, as the product being offered is the possibility to transact through the platform. Candidate substitute products, therefore, should include other platforms offering the possibility to transact (active on both sides), as well as non-intermediated transactions. See ibid 303.

of the market conditions on one side can have on the other."[91] In particular, given that there is a link between the demands of the different sides of the platform, the profit function of a hypothetical monopolist that applies a SSNIP on one side is linked to the profit in the other side, "and the question arises of which feedbacks between the profits on the two sides of the market should be considered."[92]

4.6 In this regard, there seems to be a consensus as to that all feedbacks between the different sides of the platform should be taken into account.[93] Put in other words, it is necessary to consider the extent to which an increase in price (or reduced quality or innovation) on one side causes a shift in demand on the other side, and vice versa. To this effect, the competitive constraints exerted upon the platform on each side must be duly accounted for,[94] taking into consideration the fact that the level of competition faced by the platform on one side (for instance, the advertiser side) will depend, *inter alia*, on the number of costumers on the other side (for example, the search user side) relative to other platforms.[95] For example, if a search engine has a significantly larger user base than its competitors, it is possible to predict that a price increase on the advertiser side is likely to lead to a loss of advertisers smaller than if all of the search engines had a similar user base.

4.7 The policy prescription above has important ramifications for the SSNIP test and all the quantitative methods designed to delineate markets, as the feedbacks between the different sides must be considered when analysing the profitability of the price increase (or affectation of other parameters of competition). Failing to "consider positive feedback effects in demand can result in significantly overstating or understating the breadth of the market, depending on the analytical approach."[96] Consider an auction platform like eBay serving buyers and sellers: an increase in price on the seller side (i.e. the paying side) may result in a decrease in the number of sellers, and since buyers (i.e. the free side) value the platform because it enables them to interact with sellers, a reduction in the number of sellers is likely to result in a reduction in the number of buyers, in spite of the fact that buyers do not pay a monetary price. On account of feedback effects, it is likely that more sellers exit the platform, as they will value the platform less with the reduced number of buyers. In this regard, Armstrong observed[97] that in the case of media platforms the demand on each side tends to

[91] Nicolo Zingales, 'Product Market Definition in Online Search and Advertising' (2013) 9 The Competition Law Review 29, 33.
[92] Lapo Filistrucchi, 'A SSNIP Test for Two-Sided Markets: The Case of Media' [2008] NET Institute Working Paper No. 08-34 2–3.
[93] ibid 12; Evans and Noel (n 84) 666; Filistrucchi and others (n 86) 319.
[94] "A platform that considers raising its rice to one side, for example, has to consider the extent to which customers leave that side; how that affects customer losses on the other sides; the extent to which other platforms pick up those customers; and how the addition of customers on each side of a competing platform increases the value of that platform to the other sides through positive feedback effects." David S Evans and Richard Schmalensee, 'The Antitrust Analysis of Multi-Sided Platform Businesses' [2013] National Bureau of Economic Research Working Paper 18783 18 <http://www.nber.org/papers/w18783>.
[95] Filistrucchi and others (n 86) 320.
[96] Evans and Schmalensee (n 94) 21.
[97] He shows that when readers like adverts a platform's reader demand is more elastic when facing a reduction in the number of advertisers; conversely, when readers dislike adverts, their demand is less elastic.

be more elastic when feedback effects are taken into consideration (provided that readers or users like adverts).[98] To take these feedbacks into account, economists have endeavoured to adapt the existing quantitative tools for market definition to multisided markets. Noting that "standard tools used for analy[s]ing market definition and unilateral effects for mergers need to be modified when the parties are [multisided platforms]", Evans and Noel proposed an extension of Critical Loss Analysis (a popular method to apply the SSNIP in practice), deriving formulas for its implementation.[99] Similarly, acknowledging the unsuitability of the SSNIP test to multisided settings, Filistrucchi develops analytical formulas for the implementation of the test in media markets.[100] Relatedly, White and Weyl discuss how it is necessary to extend Upward Pricing Pressure (UPP) analysis in mergers between platforms by taking into account the changes in externalities as well as changes in prices.[101] However, data requirements for the implementation of the SSNIP test and other quantitative tools in multisided markets are higher than for single-sided markets, as it is necessary "to estimate not only the matrixes of the own and cross price elasticities of demand on the two-sides of the market but also the matrixes of the network effects."[102]

4.8 It is submitted that there is no need to be alarmed about the difficulties of applying the SSNIP test or other quantitative market definition methods to multisided markets. The quantitative tests[103] designed to implement the SSNIP require good information on consumers' response to price increases that is normally unavailable, "so the results of the test may depend critically on how poor information is interpreted".[104] Indeed, there are "very few situations where there [is] sufficient quantitative data to perform the [SSNIP] test explicitly",[105] which explains the findings of a study that concluded that the European Commission has used the SSNIP test in 11% of its definitions of relevant product markets.[106] Not surprisingly, after conducting a comprehensive examination of cases involving multisided markets in the European Union and the United States, Filistrucchi et al. found that "none of the competition authorities appear to have applied a specific two-sided market formula to perform the SSNIP test."[107] This makes total sense: the SSNIP and other

Mark Armstrong, 'Competition in Two-Sided Markets' (2006) 37 The RAND Journal of Economics 668, 683.

[98] Needless to say, this feedback effect may not take place, be insignificant or operate otherwise in a given case, for which reason its existence and magnitude must be assessed on a case-by-case basis.

[99] Evans and Noel (n 87) 5.

[100] Filistrucchi (n 92) 14.

[101] Alexander White and E. Glen Weyl, 'Insulated Platform Competition', Working Paper (2012), at 28 et seq., available at http://home.uchicago.edu/weyl/IPC_5_12.pdf

[102] Filistrucchi (n 92) 22; In a similar vein, Evans and Schmalensee (n 94) 24.

[103] See European Commission, 'Commission Notice on the Definition of the Relevant Market for the Purposes of Community Competition Law' para 39.

[104] Howard H Chang, David S Evans and Richard Schmalensee, 'Market Definition. Assessment of the Relevant Market in Competition Matters - a Report Prepared for the Federal Competition Commission of Mexico' (2011) 8.

[105] Atilano Jorge Padilla, 'The Role of Supply-Side Substitution in the Definition of the Relevant Market in Merger Control - a Report for DG Enterprise A/4, European Commission' (2001) 17.

[106] Copenhagen Economics, 'The Internal Market and the Relevant Geographic Market' (2003) 7.

[107] Filistrucchi and others (n 86) 338.

quantitative tests are just one way to define markets,[108] and if they result impracticable in a given case due to unavailability of sufficient data or other reasons, competition authorities can nevertheless define markets based on all the quantitative and qualitative evidence at their disposal. As the Commission explains, "[t]here is a range of evidence permitting an assessment of the extent to which substitution would take place […] The Commission follows an open approach to empirical evidence […] The Commission does not follow a rigid hierarchy of different sources of information or types of evidence."[109]

4.9 Therefore, it is submitted that to define online platform markets taking into account the feedbacks between their different sides, rather than endeavouring to apply complex two-sided formulas that require seldom-available data, the best course of action is to rely on all of the evidence that might be available in the case at hand and use the conceptual side of the SSNIP test,[110] as even when this test cannot be quantitatively applied, "it nevertheless provides a useful way of analysing the evidence and judging the extent of substitution between products or locations."[111]

4.10 In addition, it is argued that market definition and the assessment of market power, especially in dynamic markets, should be not be carried out in a rigid manner (i.e. placing too much relevance on the exact market boundaries), which entails that competitive constraints that are not considered at the market definition stage can be nevertheless duly accounted for at subsequent stages of the competition analysis. In some cases, it may be appropriate or convenient to define separate markets for each side of the platform and consider the impact of interdependencies and network effects as part of the assessment of dominance or the competitive assessment (in mergers). Indeed, this is the approach followed by the Australian Competition and Consumer Commission in media mergers.[112]

4.11 Furthermore, when a group of customers enjoys a service free of charge, quantitative tools such as the SSNIP test become unfit for purpose, given that such tools have been "designed to examine the reactions of one set of customers, not two, to changes in price",[113] and "[t]here is no sound way to analy[s]e a 5 percent increase in a price of zero – 5 percent of zero is still zero."[114] Moreover, on the free side of the market, price is clearly not the decisive parameter based on which customers' consumption decisions are made. Rather, as observed by

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[108] European Commission, 'Commission Notice on the Definition of the Relevant Market for the Purposes of Community Competition Law' (n 103) para 15.
[109] ibid 25.
[110] "The most important aspect of the SSNIP is its conceptual side, not its quantitative side […] Even when no detailed data are available, it is useful to think of the market definition question in terms of SSNIP […] The SSNIP concept provides for a framework within which to consider the question of economic substitution." See Jonathan Faull and Ali Nikpay, 'The EC Law of Competition' (2nd edn., Oxford University Press, 2007), at 1.147
[111] New Zealand Commerce Commission, 'Mergers and Acquisitions Guidelines' (2013) para 3.24.
[112] Australian Competition & Consumer Commission, 'Media Mergers' (2006) para 107 <https://www.accc.gov.au/system/files/Media%20Mergers%20-%202011.pdf>.
[113] Renata B Hesse, 'Two-Sided Platform Markets and the Application of the Traditional Antitrust Analytical Framework' [2007] Competition Policy International 3(1) 192.
[114] David S Evans, 'Antitrust Economics of Free' [2011] John M. Olin Program in Law and Economics Working Paper No. 555.

competition authorities, when a product or service is offered at a zero price, the primary dimension of competition is quality.[115]

4.12 Therefore, for industries where competition takes place on the basis of quality attributes, Hartman et al. have proposed replacing the SSNIP test with a different quantitative version of the same that focuses instead on quality changes: the SSNDQ (small but significant and non-transitory decrease in quality) test.[116] Under this test, "the pertinent question to ask is whether a change in the [quality] attributes of one commodity would induce substitution to or from another. If the answer is affirmative, then the differentiated products, even if based on alternative technologies, ought to be included in the relevant product market."[117] These authors propose a 25% decrease in any quality attribute, which "implies that if an existing manufacturer lowers the quality of a key [quality] attribute of an existing product up to 25%, *ceteris paribus*, and no substitution to other product occurs, then the original product constitutes a distinct antitrust market."[118]

4.13 The problem with the approach above is that quality is a multi-dimensional concept comprising both objective and subjective components: whilst some quality attributes are certain, objective and observable, such as performance, durability or the capacity of a car, others are subjective and dependant on consumers' perceptions, such as aesthetic appeal or prestige associated with a particular brand.[119] Moreover, quality is also relative, since the preferences and desires of one person can be despised or disregarded by another. Hence, the quantitative assessment and measurement of quality attributes can prove extremely complex and cumbersome, since whilst it may be possible to *describe* subjective preference factors based on empirical market research, "it is considerably more difficult to *quantify* and compare levels of product quality."[120] As a result, a quantitative SSNDQ test is in practice unworkable for two reasons: firstly, given the lack of a precise measurement of quality, it is extremely challenging to identify anything equivalent to a 5-10% price increase. Secondly, in a hypothetical scenario where this is possible, quantifying the effects of the quality degradation on the revenues of the undertaking subject to scrutiny in order to determine whether the decrease in quality is profitable can prove impossible.[121]

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[115] See for example *Case COMP/M5257, Microsoft/Yahoo! Search Business (2010)* [101]; *Case COMP/M6281, Microsoft/Skype (2011)* [81].

[116] Raymond Hartman and others, 'Assessing Market Power in Regimes of Rapid Technological Change' (1993) 2 Industrial and Corporate Change 317.

[117] ibid 334.

[118] ibid 339–340.

[119] OECD, 'The Role and Measurement of Quality in Competition Analysis' (2013) 6.

[120] ibid; In this regard, the European Commission has observed: "even if some quality-related features are measurable, the overall perception of the products' quality is often based on a combination of several features. If one were to take cars as an example, the number of measurable variables at which customers may look when assessing the quality is immense and very complex, ranging from speed, acceleration, emissions, consumption to precise parameters of the individual components. The assessment of quality is thus often a complex and imprecise exercise in itself, and involves the balancing of evidence which is often of subjective nature such as different perception of customers." ibid 79 (European Commission's submission).

[121] "Price increases can immediately be translated into the evaluation of profits, while a very complex assessment would be needed for profits derived from quality degradation (such as calculations of cost

4.14 It is submitted that thinking about substitution in terms of SSNDQ on the 'free' side of a platform is conceptually appealing,[122] as it faithfully depicts the basis on which customers of 'free' online services may likely decide to switch their demand to other platform (or one-sided) suppliers: for example, if average users were experiencing issues when logging in to Facebook, because the website is crashing due to user overload or other reasons, the pertinent question would be whether users would switch away from Facebook to other social network platforms such as Google+, Tumblr or Twitter.[123] This analysis, however, must (i) rely on qualitative methods[124] and (ii) take into consideration, when possible, the feedback effects between the free side and the other sides.[125]

4.15 Importantly, efforts to have access to data, or lack of access to data, can effectively pose constraints on the behaviour of online firms, but a traditional market definition analysis is unsuited to capture them. To capture data-related constraints, Harbour and Koslov advanced the definition of 'markets for data', in addition to the markets for the services that are enabled and powered by such data.[126] In particular, they contended that this approach to market definition would reflect the distinction between that collection at one point in time and subsequent expanded data usage, and also would recognise in a proper manner the high significance and value of growing datasets about consumers created from the operation of online services.[127] More importantly perhaps, they noted that this approach would be consistent with online platform markets' reality, as "[I]nternet-based firms often derive great value from user data, far beyond the initial purposes for which the data initially might have been shared or collected, and this value often has important competitive consequences. In contrast, product market definitions based only on a snapshot of current data usage may not accurately capture this aspect of competition, especially in markets that exhibit network effects based on aggregations of data."[128] Giving an example of a situation where it would have been useful to define an input market for data

savings)". See OECD, 'The Role and Measurement of Quality in Competition Analysis' (n 119) 80 (European Commission's submission).

[122] "The notion of substitution must be part of the analysis, even though it does not rely on [the] formalistic method underpinning the SSNIP test." Florence Thépot, 'Market Power in Online Search and Social-Networking: A Matter of Two-Sided Markets' [2012] CLES Working Paper Series 4/2012 19 <https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2307009>.

[123] Aleksandra Gebicka and Andreas Heinemann, 'Social Media & Competition Law' (2014) 37 World Competition 149, 158.

[124] '[A]t present competition authorities tend to rely upon qualitative methods of assessing product quality where necessary. Such methods can include the use of material obtained through prior or on-going market investigations, from consumer surveys and interviews, as well as an examination of internal documents and business practices of the firm(s) under scrutiny. Market information gathered by such means might then form the basis for revealed preference analysis, or other analytical techniques by which market dynamics can be assessed.' OECD, 'The Role and Measurement of Quality in Competition Analysis' (n 119) 6; "The area of Internet search is one example since competition is based on quality of the product, rather than on its price, and this is by nature hard to measure with quantitative criteria." Zingales (n 91) 34.

[125] For example, Facebook users could be tempted to switch to a different platform when confronted with a decrease in quality; however, the stronger the network effects, the less likely they will switch their demand to other social networks, in spite of the quality degradation.

[126] Pamela Jones Harbour and Tara Isa Koslov, 'Section 2 in a Web 2.0 World: An Expanded Vision of Relevant Product Markets' (2010) 76 Antitrust Law Journal 769, 773.

[127] ibid.

[128] ibid.

itself, these authors referred to the Google/DoubleClick merger, and suggested that even before the merger Google might have held a significant share in a hypothetical market for "data gathered via search",[129] and that Google's acquisition of DoubleClick might have "substantially increased the likelihood that Google would acquire or maintain market power in that market".[130]

4.16 There is a lot to commend in this approach. First and foremost, it captures the competitive dynamics of an industry which a traditional market definition exercise would most likely miss. Traditional market definition can only address and identify competition for the services that are offered to users and advertisers on online platform markets, but it struggles to identify what occurs in the 'background': a race to gather as much data as possible to improve the quality and relevance of platform services. Secondly, a putative market for data could allow to appreciate a new dimension of market power ('data market power'), since an online platform can reinforce its position by playing simultaneously in multiple parallel markets where it can collect additional data and verify, test and process it to draw further insights,[131] thereby deriving additional value far beyond the benefits arising from the original data collection.

4.17 However, in spite of its conceptual appeal, the 'market for data' argument suffers from a fundamental flaw, which is given by the fact that a 'market for data' will be essentially fictional if data are not marketed to customers. This is normally the case. The main platform providers do not trade the data they collect; rather, they use it as an input for the provision of their respective services. Therefore, the 'market for data' concept fails to meet the most fundamental requirement for a market to exist, which is the presence of actual market transactions between suppliers and customers of a product.

4.18 It is argued, therefore, that the best course of action is to avail of the conceptual guidance provided by the 'market for data' argument. Indeed, the concept of 'market for data' quite rightly highlights the importance of data for the provision of online platform services, as well as the fact that competitive actions can take place and competitive effects can be observed in the competitive process for data, outside the existing relevant product markets for the services powered by data. Yet, it is fictional and based on a theoretical misconception, and as such, it may bring about more confusion than clarity. After all, data is an asset, and should be treated as such, for which reason its implications should be taken into consideration at later stages of market power assessment.

4.19 With regard to the assessment of market power in any multisided market or any of its sides (i.e. either the free or the advertising side), the critical question to ask is whether entry or expansion poses a credible competitive constraint on the incumbent.[132] In online markets, the extent to which such a competitive

[129] ibid 784; These authors also suggested a 'somewhat broader market', such as "data used for behavioral advertising"", which would include not only search data, but also data gathered from other sources and applications that offer clues regarding consumer preferences. ibid 785.
[130] ibid 784.
[131] Zingales (n 91) 40.
[132] The Unilateral Conduct Working Group, 'Unilateral Conduct Workbook Chapter 3: Assessment of Dominance' (2011) Report Presented at the 10th Annual ICN Conference The Hague, Netherlands 24 <http://www.internationalcompetitionnetwork.org/uploads/library/doc752.pdf>.

constraint is credible depends largely, but not exclusively, on the following factors:

- Direct and indirect network effects

  Network effects take place when the value to a buyer of an extra unit is higher when more units are sold, everything else being equal.[133] Network effects can be direct, where increasing the number of users of a good in turn increases the value of the good to individual users (e.g. telephone networks), or indirect, where the value of the product or service to one group of customers increases directly with the level of usage by the other group of customers (such as the case of e-commerce platforms: more buyers attract more sellers, and vice versa).

  The higher the magnitude of network effects, the greater the protection afforded to the incumbent's dominant position.

- Parallel use of multiple services ('Multihoming')

  Parallel use of the same service from different providers reduces the room for market power. Conversely, absence of multihoming increases the risk of market power. For example, multihoming is a rather strange phenomenon in horizontal search, a market famously dominated by Google on a global scale. In *Microsoft/Yahoo! Search Business*, the Commission observed "that users tend to 'single-home', meaning that they perform over 90% of their search queries within a month on one single search engine",[134] and noted that "[t]he very limited share of user multi-homing between Microsoft and Yahoo [then second largest search engine] shows that users rarely run checks between these two platforms."[135] Single-homing in horizontal search may be the consequence of entrenched surfing habits and search personalisation, in such a way that if users are accustomed to a search engine, they may not try other search engines even if they perceive lower quality results.[136] Here, it is possible to see how the absence of multihoming on one side of the market secures success on the other side. Insofar as Google search is the most popular search engine amongst users, advertisers will be compelled to advertise on Google's platform, even if the costs of doing so rise over time.[137]

- Switching costs

  In the context of social networks, lack of data portability results in high switching costs, because contacts, shared information, messages, comments and photographs cannot be transferred when switching to a different network.[138] To circumvent lack of data portability, users of course have the alternative of

[133] Nicholas Economides, 'Antitrust Issues in Network Industries' in Ioannis Kokkoris and Ioannis Lianos (eds.), *The Reform of EC Competition Law - New Challenges* (Kluwer Law International 2010) 345.
[134] Teresa Vecchi, Jerome Vidal and Viveca Fallenius, 'The Microsoft/Yahoo! Search Business Case' (2010) 2 Competition Policy Newsletter 44.
[135] *Microsoft/Yahoo! Search Business* (n 7) [221].
[136] Zingales (n 91) 44.
[137] It has been documented that Google's AdWords has become increasingly expensive; however, advertisers have not switch to Google's competitors. See Rampton (n 56).
[138] Monopolkommission (n 3) 73.

reposting their profile information, wall posts, photos, videos, and any other information, but this alternative is time consuming, impossible in certain cases and subject to errors, for which reason users are more likely to "simply live with their existing Facebook page."[139] Accordingly, users become locked-in and will not switch to other social network providers, even though they are entirely free to do so if they wish.[140] The right to data portability introduced by the GDPR[141] is expected to change this scenario, although its impact on competition in social network markets remains uncertain.[142]

- Access to data – data-driven economies of scale, scope and speed, trial-and-error effects and spillovers

  As explained in paragraph 1.4, the operation of these effects may lead to highly concentrated markets and the consolidation of dominant positions. In addition, big data and big analytics may confer a competitive advantage that, if large enough, may amount to an insurmountable barrier to entry.[143]

- Strength of dynamic competition

  Schumpeter famously described competition as the "perennial gale of creative destruction" that "strikes not at the margins of the profits and the outputs of the existing firms, but at their foundations and their very lives".[144] In dynamic markets, the competitive race does not reward the producer selling more at the lowest price, but rather the innovator who comes up with the best 'killer' product that conquers the entirety of the market.

  Accordingly, a near-monopoly position or a highly concentrated market is according to this view almost an inevitable outcome in high-tech markets, but this tendency to monopoly is said to be relatively benign, given that monopoly positions are (allegedly) inherently fragile: "competition in high technology markets is frequently characterized by incremental innovation, punctuated by major paradigm shifts. These shifts frequently cause incumbents positions to be completely overturned […] [A]ntitrust authorities need to be cognizant of the self-correcting nature of any dominance that is obtained in a particular regime [… as] market dominance in technologically progressive industries is likely to be transitory."[145]

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[139] Spencer Weber Waller, 'Antitrust and Social Networking' (2012) 90 NCL Rev. 1771, 19.
[140] Gebicka and Heinemann (n 123) 160.
[141] See Article 20 GDPR.
[142] "Considering the different design features of social networks, it could become difficult, if not impossible, to come up with a format that would ensure that all the transferred data is displayed in the same way as in the social network from which the data was extracted." Inge Graef, 'Mandating Portability and Interoperability in Online Social Networks: Regulatory and Competition Law Issues in the European Union' (2015) 39 Telecommunications Policy 502, 507–508.
[143] Newman Nathan, 'Search, Antitrust and the Economics of the Control of User Data' (2014) 41 Yale Journal on Regulation 409.
[144] Joseph A Schumpeter, *Capitalism, Socialism and Democracy* (Routledge 1942) 84.
[145] David J Teece, *Managing Intellectual Capital: Organizational, Strategic, and Policy Dimensions* (OUP 2000) 160–163.

The strength of dynamic competition, that is, whether market shares are fragile or stable over time, or whether there is a dynamic record of entry and exit in a given industry, is a good indicator of the competitive health of online markets.

5. How do technologies such as artificial intelligence and machine learning affect competition and what are their implications for competition policy? Does algorithmic pricing raise novel concerns about competition?

5.1 As more companies and industries switch to computer algorithms to improve their pricing models, customise services and predict market trends, big data and big analytics can provide novel ways to achieve and sustain collusion, even without a formal agreement or human interaction.

5.2 In a traditional cartel case, executives of competitors secretly reach an agreement to fix prices, allocate markets or restrict output. However, under current technology computer algorithms can be used as the messenger that is programmed by the cartel members to implement the agreement and monitor and punish any deviation from it. For example, in 2015 the DOJ charged the members of a price-fixing cartel agreement, the purpose of which was to fix, increase, maintain and stabilise the prices of some posters sold in the US on Amazon Marketplace. In order to implement the agreement, David Topkins and his co-conspirators "agreed to adopt specific pricing algorithms for the sale of the agreed-upon posters with the goal of coordinating changes to their respective prices."[146] Here the algorithm was just an extension of the humans' cartel agreement, and therefore this case is an example of express collusion.

5.3 Computer algorithms can be also used to facilitate the conditions necessary for stable tacit collusion.[147] Traditionally, a large number of competitors makes it harder to designate a hub for coordination, monitor deviations and implement effective punishments for cheating members. However, algorithms can allow for coordination, monitoring and punishment to take place also in less concentrated markets, as their ability and speed in collecting and analysing data makes the number of firms to monitor and agree with less relevant.[148] In addition, algorithms have the inherent ability to increase market transparency[149]

[146] *United States v Topkins, CR 15-00201 WHO (ND Cal Apr 30, 2015) Plea Agreement* 4.

[147] 'Tacit collusion, sometimes called oligopolistic price coordination or conscious parallelism, describes the process, not in itself unlawful, by which firms in a concentrated market might in effect share monopoly power, setting their prices at a profit-maximizing, supracompetitive level by recognizing their shared economic interests and their interdependence with respect to price and output decisions.' *Brooke Group, v Brown & Williamson Tobacco Corp, 509 US 209 (1993)* 227.

[148] OECD, 'Algorithms and Collusion: Competition Policy in the Digital Age' (2017) 21 <http://www.oecd.org/daf/competition/Algorithms-and-colllusion-competition-policy-in-the-digital-age.pdf>.

[149] 'The increase of market transparency is not only a result of more data being available, but also of the ability of algorithms to make predictions and to reduce strategic uncertainty. Indeed, complex algorithms with powerful data mining capacity are in a better place to distinguish between intentional deviations from collusion and natural reactions to changes in market conditions or even mistakes, which may prevent unnecessary retaliations.' ibid 22.

and frequency of interaction amongst competitors,[150] features which make industries more prone to collusion.[151] Indeed, the French and German competition authorities have noted that "[e]ven though market transparency as a facilitating factor for collusion has been debated for several decades now, it gains new relevance due to technical developments such as sophisticated computer algorithms. For example, by processing all available information and thus monitoring and analysing or anticipating their competitors' responses to current and future prices, competitors may easier be able to find a sustainable supra-competitive price equilibrium which they can agree on."[152]

5.4 In their book *Virtual Competition*, Ezrachi and Stucke explore a number of scenarios where algorithmic technology enhances the risk of collusive outcomes. In one of those scenarios, which they call 'the Predictable Agent', each competitor programs its algorithm to monitor price changes and swiftly react to any competitor's price reduction. In addition, they also program their algorithms to follow price increases when sustainable, that is to say, where others timely follow price rises in such a way that no competitor benefits from keeping prices lower.[153] Since these algorithms can assess and adjust prices within milliseconds, they can readily match a rival's discount, thereby eliminating the incentive to discount in the first place.[154] Accordingly, in a scenario dominated by similar pricing algorithms that enable a situation of interdependence, there is a real risk of higher prices.[155]

5.5 Additionally, pricing algorithms may allow for more effective price discrimination. In economics, perfect price discrimination (also known as first-degree price discrimination) amounts to a scenario where a seller charges each customer the maximum price they are willing to pay (i.e. their reservation price). In a perfect price discrimination scenario, the seller captures the entirety of consumers' surplus (the difference between the price a consumer pays for a given product or service and his reservation price). Whilst this scenario has been hitherto more theoretical than real, pricing algorithms, fed by a constant stream of up-to-date data on consumer preferences and revealed interests, may categorise consumers in narrow groups and charge each of such groups different prices determined on the basis of their estimated reservation price.[156]

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[150] "[T]he advent of the digital economy has revolutionised the speed at which firms can make business decisions. Unlike in a brick and mortar business environment where price adjustments are costly and take time to implement, in online markets prices can in principle be changed as frequently as the manager wishes. If automation through pricing algorithms is added to digitalisation, prices may be updated in real-time, allowing for an immediate retaliation to deviations from collusion. In fact, the combination of machine learning with market data may allow algorithms to accurately predict rivals' actions and to anticipate any deviations before they actually take place." ibid.

[151] ibid 21.

[152] Autorité de la Concurrence and Bundeskartellamt (n 12) 14–15.

[153] Ezrachi and Stucke (n 44) 61.

[154] ibid 62.

[155] ibid.

[156] For a discussion of data as enabler of price discrimination see generally Nathan Newman, 'The Costs of Lost Privacy: Consumer Harm and Rising Economic Inequality in the Age of Google', (2014) 40 William Mitchel Law Review.

5.6 The effects described in paragraph 1.4, especially learning-by-doing, are the key enablers of this development. Pricing algorithms can observe and assess the reaction of users and predict how a user will likely react under certain circumstances. Based on predictive capabilities, users are categorised in subgroups of like-minded, like-price-sensitive individuals that share common biases, interests and preferences. This subgrouping also enables the algorithm to approximate the user's reservation price, observe behaviour and adjust in a more accurate fashion. Accordingly, "the more times the algorithm can observe what you and others within your grouping do under various circumstances, the more experiments it can run, the more it can learn through trial and error what your group's reservation price is under different situations, and the more it can recalibrate and refine."[157]

5.7 The effects of price discrimination on welfare are ambiguous, and it is not even certain whether price discrimination in itself is within the scope of EU Competition Law.[158] However, an argument can be made in the sense that, given the effectiveness of pricing algorithms in extracting consumers' wealth, 'almost perfect' price discrimination may justify intervention. Indeed, price discrimination is likely to enable a dominant firm or a group of firms to exploit consumers and increase barriers to entry or expansion.[159] In this connection, the UK Competition and Markets Authority ('CMA') found that "where a firm users consumer data to separate different groups of customers and offers a different price to each group, [small competitors or entrants] would not have a substantial fixed base of existing customers, and so may be unable to compete as successfully to target customers through offering them lower prices."[160]

6. What is the appropriate approach to mergers and takeovers in digital markets – what are the key challenges and how should they be addressed?

6.1 It is possible to identify three main challenges in the context of mergers and takeovers in digital markets. Firstly, whether data has any role in market definition, or whether markets for data can or should be defined. Secondly, the crafting of sound criteria to assess whether data may raise barriers to entry and create or strengthen market power. And thirdly, whether the notification thresholds under the EUMR are capable of capturing all concentrations that may significantly impede effective competition.

6.1 The issue of data and market definition was addressed in paragraphs 4.15-4.18. In short, where data is used only as an input to production, a market for data cannot and should not be defined, as there is no supply of data, and without

[157] Ariel Ezrachi and Maurice E Stucke, 'Supplementary Written Evidence (OPL0043) – Online Platforms and the EU Digital Single Market' (2015) 4.9 <http://data.parliament.uk/writtenevidence/committeeevidence.svc/evidencedocument/eu-internal-market-subcommittee/online-platforms-and-the-eu-digital-single-market/written/23223.html#_ftn32>.
[158] Autorité de la Concurrence and Bundeskartellamt (n 12) 21–22.
[159] Ezrachi and Stucke (n 44) 118–119.
[160] CMA, 'The Commercial Use of Consumer Data – Report on the CMA's Call for Information' (n 4) 3.48.

supply no market can exist. Conversely, if data is sold, exchanged or licensed, a market for data could be defined. The Commission has already hinted this possibility. In its *Facebook/WhatsApp* decision, the Commission indicated that it did not investigate "any possible market definition with respect to the provision of data or data analytics services, since neither of the Parties is currently active in any such potential markets".[161] Accordingly, if Facebook or WhatsApp had been active in the provision of data, the Commission would have likely defined a potential relevant market for data.

6.3 Moving on to the second challenge, it is of the essence to define sound criteria to assess whether data may have detrimental effects on competition (i.e. whether the combination of datasets resulting from the merger may raise barriers to entry and lead to the creation of a dominant position). Thus far, in its merger decisional practice, the Commission has used two criteria to assess the potential existence of a 'data advantage': (i) whether or not producing the data is costly and resource-intensive (whether the data is easily replicable or expensive and difficult to replicate),[162] and (ii) whether post-transaction there remains available an amount of data sufficient for competitors to match the competitive advantage arising from the transaction for the merging firms (whether data is widely available or scarce).[163]

6.4 It is submitted that the first criterion is a sound one. Indeed, in Opinion No. 10-A-13, the Autorité de la Concurrence explained that the criteria it uses to determine whether the use of customer datasets could result in a restriction of competition include the conditions under which the dataset was created, as well as whether the dataset could be replicated under reasonable conditions by competitors.[164] If a dataset is easily replicable, or replicable under 'reasonable conditions', barriers to entry are unlikely to arise.

6.5 However, the second criterion is problematic. In *Google/DoubleClick*, *Telefónica UK/Vodafone UK/Everything Everywhere* and especially in *Facebook/WhatsApp*, the Commission concluded that the concentration of data that would take place after the acquisition was unlikely to raise competition concerns, as there remained large amounts of data available to competitors. At first glance, this conclusion appears correct. After all, data can be obtained from third parties (for example, from data brokers), and is inherently non-rivalrous and non-exclusive. In addition, data is reportedly 'widely available'. However, from a deeper analysis of data's inherent features, a more nuanced picture emerges: even if widely available, data is not fungible, and may not be readily accessible to entrants and competitors, not at least in the scale and scope required to compete against the incumbent. Accordingly, even if 'widely available', data may still raise barriers to entry and confer market power.

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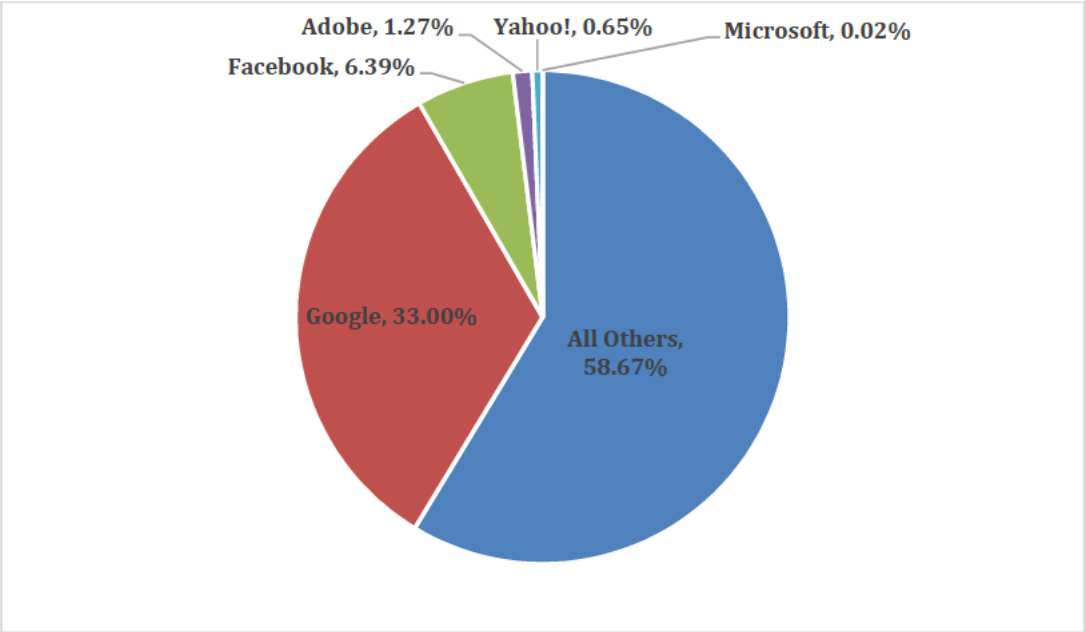
[161] *Case COMP/M7217, Facebook/WhatsApp (2014)* 72.
[162] *Case COMP/M4854, TomTom/Tele Atlas (2008).*
[163] *Case COMP/M4731, Google/DoubleClick (2008)*; *Case COMP/M6314, Telefónica UK/Vodafone UK/Everything Everywhere/JV (2012)*; *Case COMP/M.7217, Facebook/WhatsApp (2014)* (n 162).
[164] Autorité de la Concurrence and Bundeskartellamt (n 12) 31.

6.6 Indeed, the fact that data is non-rivalrous and non-exclusive should not lead to broad statements such as 'data is widely available'. It is true that consumers can surrender the same kind of data to different offline and online service providers, and that the same data can be used by multiple firms to draw inferences, create consumer profiles or for myriad other purposes. But the fact that two or more companies could have the same data does not necessarily entail that they will have it.[165] Apple and Google can both have profiles of the same consumer, but that hardly means that the comprehensiveness of such profiles is the same, or that both companies have made the same inferences. Moreover, although certain data is effectively non-exclusive, "a lot of data that are of particular relevance for companies are in the exclusive control of the companies that collected it and that, therefore, decide about its use, often denying access to competitors",[166] as for example, search data derived from queries entered in websites having exclusive search and search advertising syndication agreements with Google, Facebook's user profiles,[167] or Yelp's and TripAdvisor's user reviews.[168]

6.7 Yet, these considerations seem to have beeen overlooked in the Commission's assessments in the cases listed in paragraph 6.5. In its *Facebook/WhatsApp* decision, the Commission held that the transaction would only raise competition concerns if the concentration of data within Facebook's control were to allow it to strengthen its position in advertising, and dismissed that scenario because there were 'a significant number of market participants that collect user data alongside Facebook', including Google and other companies such as *inter alia* Apple, Amazon, eBay, Microsoft, AOL, Yahoo!, Twitter, IAC, LinkedIn, Adobe and Yelp,[169] and there would be a large amount of Internet user data valuable for advertising purposes not within Facebook's exclusive control. For illustrative purposes, the Commission calculated the share of data collection across the Internet:[170]

[165] Robert Mahnke, 'Big Data as a Barrier to Entry' (2015) 5 Antitrust Chronicle 3.
[166] Nils-Peter Schepp and Achim Wambach, 'On Big Data and Its Relevance for Market Power Assessment' (2015) 7 Journal of European Competition Law & Practice 120, 2; In the same vein CMA, 'The Commercial Use of Consumer Data – Report on the CMA's Call for Information' (n 4) 87.
[167] Facebook, 'Terms of Service' (2015) <https://www.facebook.com/terms.php>.
[168] FTC Staff (n 27) 34–36.
[169] *Facebook/WhatsApp* (n 37) [188].
[170] *Facebook/WhatsApp* (n 37) [188].



6.8 The problem with the Commission's line of reasoning and the calculation of data collection share above is that it confuses 'data being available' with 'data being fungible': the fact that data is widely available does not entail that all data is substitutable with each other. As Mahnke observes, "[t]here are data, and then there are data",[171] and it is highly uncertain whether the data Microsoft, Twitter, Adobe and Yelp collect are equally valuable to Facebook for its advertising business as the data it could collect from WhatsApp after the consummation of the merger. Data is not fungible, for which reason the relevance of some kind of data is likely to vary to a great extent with respect to different business models.[172] For example, the information social network platforms have on their users is likely to be as rich or even richer than that gathered by search engines from search queries, but unlike social network data, search data have the advantage of allowing to identify consumers who are in active search for a specific product or service,[173] as a result of which they are unlikely to be substitutable.

6.9 In addition, the Commission's second criterion also confuses 'availability of data' with 'accessibility to data'. Other competitors may collect data alongside Facebook, and there might have well been a large amount of data up for grabs post-transaction, but that hardly means that Facebook's actual and potential competitors will have ready access to the kind of data Facebook was able to access post-merger. As was explained in paragraph 2.4, setting up a platform requires high investment, which deters entry, and additionally, direct and indirect network effects are likely to limit the number of an incumbent platform's users switching to a new entrant or fringe suppliers. Furthermore, the extent of the competitive advantage arising from data depends largely on its scale ('volume'), scope ('variety') and the velocity with which it is collected and processed, and there are 'trial and error' or 'learning-by-doing' effects[174]

[171] Mahnke (n 166) 3.
[172] Schepp and Wambach (n 167) 121.
[173] Autorité de la Concurrence and Bundeskartellamt (n 12) 44.
[174] Stucke and Grunes (n 16) 170.

and spill-overs of great competitive significance (see paragraph 1.4). These factors must be central in the analysis of any data-advantage.

6.10 In view of the above, a sounder test to assess whether data may lead to the erection of barriers to entry and the creation or strengthening of market power is warranted. Critically, such test should take into account the fact that, even if widely available, data is not necessarily fungible, and also that in order to compete effectively in a market, it may be necessary to access and process data on the scale and scope, and at a speed only available to the platform incumbent.

6.11 With regard to the third challenge, under the EUMR, the parties to a concentration have the obligation to notify it to the Commission where their combined turnover exceeds certain thresholds (Articles 1 and 4 of Regulation 139/2004). The problem with this notification requirement is that it may lead to an enforcement gap. In concrete, the acquisition of a company with low or no turnover by a worldwide market leader with turnover in the billions may not be scrutinised by the Commission if the thresholds are not met. This issue is of particular significance in digital markets, as it is common to see firms with business models which involve the creation of datasets of commercial value, but which have not yet managed to exploit those datasets to their fullest potential, for which reason their turnover remains low (as was the case of WhatsApp prior to its acquisition by Facebook). Also, the notification thresholds fail to catch acquisitions of startups in high-technology markets which have significant market potential but current low turnover. Accordingly, market leaders "can eliminate up-and-coming competitors from the market at an early stage of development by acquiring them before they grow into serious competitors."[175] To fill this enforcement gap, the German Monopolkommission has recommended the inclusion in the EUMR of additional notification requirements based on the transaction volume (i.e. the inclusion of purchase price thresholds).[176]

7. What tools does competition policy need to deal with issues in the digital economy in a sufficiently timely, effective and far-sighted manner? To what extent are these in place in the UK?

7.1 Ensuring timeliness, effectiveness and far-sightedness in competition law enforcement in digital markets is a daunting task, on account of the fast-moving nature of these markets, the fact that many of these markets are new, the absence of consensus as to how market power should be assessed when data and algorithms play a fundamental role, and the inherent uncertainty as to future market developments and the potential advent of disruptive technologies. However, the tools listed in the following paragraphs are capable of ameliorating these difficulties.

7.2 Investigations of potential competition law infringements are notoriously lengthy, a fact that is likely to have pernicious consequences on competition

[175] Monopolkommission (n 3) 107.
[176] ibid.

enforcement in digital markets. Given the dynamic and fast-moving nature of these markets, there is a high risk that, by the time a competition authority has completed its investigation, competitors may have already excluded from the market, the market power of the dominant firm may have been entrenched even further, or the market may have evolved in such a way that any remedies imposed to tackle the anticompetitive conduct are ineffective in restoring undistorted competition.

7.3 Under former Competition Commissioner Almunia's mandate, commitment proceedings (Article 9 of Regulation 1/2003) were chosen as the preferred route to address the risks of abuse in the digital markets dominated by Google. The reason for this was probably because commitment proceedings are said to be particularly suitable for cases in which proof of an infringement would be too cumbersome (i.e. complex cases). However, this route proved extremely lengthy anyway. The Commission's Google Shopping investigation begun in 2010, and over a period from March 2013 to February 2014 the Commission received comments from complainants on several commitment offers submitted by Google which were considered provisionally suitable, but no decision was ultimately reached based on these commitments. In the end, the Google Shopping decision was only passed in June 2017 under the mandate of Margrethe Vestager, after the proceedings were switched to the Statement of Objections route.

7.4 Based on the above, ordering interim measures in cases concerning digital markets may be a better route to tackle the risk of damage to competition, on the basis of a *prima facie* finding of infringement (Article 8 of Regulation 1/2003). This is because through interim measures undertakings suspected of engaging in anticompetitive behaviour can be ordered to cease such conduct, even before there is a final infringement decision. The impediment to follow this route is the high threshold required: the Commission must prove "irreparable harm" to competition. This is why the Commission seldom uses this tool. However, under national law the situation may be different. For example, the Autorite de la Concurrence has been imposing these measures in France with a high level of success. In September 2014, the Authorite de la Concurrence ordered GDF Suez to grant competitors access to parts of its database of clients, which would ensure that competing gas suppliers can compete more effectively with GDF by enabling them to better inform customers of alternative offers available to them.[177]

7.5 In the House of Lords report on Online Platforms and the Digital Single Market some contributors observed that interim measures are rarely used in the UK. In particular, Mr Viros noted that the CMA has had "a difficult time using interim measures", because "its only decision was annulled by the Competition Appeal

[177] Autorité de la Concurrence, 'Autorité de La Concurrence Issues Urgent Interim Measures Ordering GDF, Incumbent Gas Supplier, to Grant Its Competitors Access to Its Client Database - ECN Brief - European Commission' (*ECN Brief*, 18 February 2015) </multisite/ecn-brief/en/content/autorit%C3%A9-de-la-concurrence-issues-urgent-interim-measures-ordering-gdf-incumbent-gas>.

Tribunal."[178] The Enterprise and Regulatory Reform Act 2013, however, lowered the threshold for intervention. The CMA has referred to this reform as "a beneficial initial step to facilitating the use of such measures to avoid significant damage to a party or the public interest while the CMA's investigation is ongoing."[179] However, the CMA has noted that despite the lowered threshold, "there remain various procedural steps mandated in legislation which can materially limit the ability of the CMA to act promptly, and which may go beyond what is necessary to ensure due process for the parties involved."[180]

7.6 Sector inquiries and market investigations are valuable tools to deal with issues in the digital economy in an effective manner, as their outcomes may deepen competition authorities' understanding of digital markets and be translated into important findings that can serve as the basis to tackle anticompetitive agreements, conduct and mergers through active and effective antitrust enforcement and merger control review. This is particularly relevant to digital markets, as there is little consensus in the academic literature as to their competitive dynamics and the effects of certain agreements and conduct on consumer welfare.

7.7 According to Article 17 of Regulation No. 1/2003, where the trend of trade between Member States, the rigidity of prices or other circumstances suggest that competition may be restricted or distorted within the internal market, the Commission may decide to conduct an inquiry into a particular sector of the economy or into a particular type of agreements across various sectors. On this basis, the Commission launched a sector inquiry into e-commerce on 6 May 2015.[181] The Commission noted that despite marked growth of the e-commerce sector in the Union over the last year, cross-border e-commerce remains limited, and although several reasons may explain this phenomenon, such as language barriers, consumer preferences and differences in legal frameworks between Member States, "[t]here are also indications that undertakings active in the e-commerce sector may be engaged in anti-competitive agreements, concerted practices or abuses of a dominant position".[182] As part of the sector inquiry, the Commission requested information from a variety of actors in e-commerce markets throughout the EU both in relation to online sales of consumer goods (such as electronics, clothing, shoes and sports equipment) and in relation to online distribution of digital content. During the inquiry, the Commission gathered evidence from nearly 1,900 companies operating in e-commerce of consumer goods and digital content, and analysed approximately 8,000

[178] House of Lords, 'Online Platforms and the Digital Single Market' 54.
[179] CMA, 'CMA Response to Government Consultation - Modernising Consumer Markets Green Paper' (2018) 100 <https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/726169/CMA_response_to_consumer_green_paper.pdf>.
[180] ibid.
[181] European Commission, 'Commission Decision of 6 May 2015 Initiating an Inquiry into the E-Commerce Sector Pursuant to Article 17 of Council Regulation (EC) No. 1/2003' (2015) <http://ec.europa.eu/competition/antitrust/ecommerce_decision_en.pdf>.
[182] ibid 2–3.

distribution contracts.[183] The Commission adopted the Final Report on the e-commerce sector inquiry on 10 May 2017, which highlighted increased use of selective distribution systems and of contractual restrictions to better control product distribution, such as pricing restrictions, marketplace (platform) bans, restrictions on the use of price comparison tools and exclusion of pure online players from distribution networks. The Commission stated that although some of these practices may be justified, for example in order to improve the quality of product distribution, others may unduly prevent consumers from benefiting from greater product choice and lower prices in e-commerce and therefore warrant Commission action to ensure compliance with EU competition rules.

7.8 In the UK, the CMA has been very active in conducting market studies and empirical research to reach proper understanding of the manner in which certain digital markets work and identify patterns of consumer and business behaviour. For example, the CMA recently completed a market study on Digital Comparison Tools (such as price comparison websites). The study found that whilst digital comparison tools offer a range of benefits, including helping people shop around by making it easier to compare prices and encouraging suppliers to compete harder to provide lower prices and better choices, "some sites could improve their practices to ensure that consumers can trust them and can make sufficiently well-informed choices between digital comparison tools and between suppliers that are listed on them."[184] Based on the study's findings, the CMA launched a competition law investigation in relation to one price comparison website's contracts with home insurers which limit insurers' ability to charge a lower price on one platform than on another (wide parity clauses).[185]The CMA has also conducted empirical research and analysis into specific aspects of online markets, especially personalised pricing online and how users search for information online.[186]

7.9 Having recourse to expert advice is also of the essence for effective enforcement in data-intensive sectors, on account of information asymmetry: whilst tech companies have full control and understanding of their algorithmic technologies and data-driven applications, competition enforcers do not. In this connection, Competition Commissioner Margrethe Vestager announced in 2017 the setting up of a panel of experts to advise the Commission on the implications of big data that have an impact on consumers, and on how competition enforcement should respond in this regard.[187] In the UK, the CMA has gone the extra mile, as it creating a Data and Digital Insights team with an aim to increase its capability to understand digital and technology businesses and business models, and to use data and algorithms for law enforcement (for example, to capture, analyse and draw conclusions from large datasets, to craft remedies, and to

[183] European Commission, 'E-Commerce - Sector Inquiries - Antitrust - European Commission' <http://ec.europa.eu/competition/antitrust/sector_inquiries_e_commerce.html>.
[184] CMA, 'Implications of E-Commerce for Competition Policy - Note by the United Kingdom' (2018) 56 <https://one.oecd.org/document/DAF/COMP/WD(2018)53/en/pdf>.
[185] ibid 60.
[186] ibid 62.
[187] Margrethe Vestager, 'How Competition Can Build a Better Market - Speech at the American Enterprise Institute, Washington' (2017) Text <https://ec.europa.eu/commission/commissioners/2014-2019/vestager/announcements/how-competition-can-build-better-market_en>.

create a knowledge bank). The CMA has noted that some of the initial tasks of the team "will include understanding better what data is available for its current cases, accessing/obtaining that data, and improving its use of it, as well as understanding how firms use data and algorithms in their business models and what implications that might have for consumers and competition."[188]

7.10 Far-sighted competition enforcement is extremely difficult to attain. Under the Schumpeterian conception of competition, in high-tech markets "it is not just immediate entry that tempers behaviour in high technology industries; it is also the threat of the next generation of products and services that is of concern to incumbents. Current leaders must succeed in each round of innovation or lose leadership."[189] However, predicting a disruptive technological shift that could potentially dislodge an incumbent is likely to be impossible. It is submitted that the mere theoretical possibility that a potential competitor will come up in the future with superior technology that will displace online market leaders should not be considered an actual competitive constraint that could justify a hands-off approach to competition law enforcement. Google and Facebook are commonly cited as examples of successful entrants in dynamic markets, both of them having displaced then-market leaders Yahoo! and MySpace.[190]If Google and Facebook did it, the argument runs, they can be displaced too in the future. However, these examples of successful entrants are not necessarily illustrative of current entry conditions, as these conditions are likely to have changed since their time of entry.[191] For example Yahoo! in the beginning was a man-made index of the web with each URL, and did not rely on the collection of data to make profits.[192] Moreover, Yahoo! did not develop its search engine until 2002, having relied previously on Google's search technology, which probably gave Google the scale necessary to improve its own search engine and leapfrog Yahoo!. Nor did MySpace rely on data mining as its main business proposition. Also, neither Yahoo! nor MySpace benefited from the data-driven effects explained in paragraph 1.4. The dynamics of big data are likely to have entrenched Google's and Facebook's incumbency way beyond the position Yahoo! and MySpace once had.

7.11 Merger retrospectives can be a valuable tool to identify with precision current market entry conditions, the actual significance of data in a given market, and to predict to some extent future market. Competition authorities may ask what happened after the consummation of a data-driven merger. For example, how did markets develop after the completion of the Google/DoubleClick merger? In *Google/DoubleClick,* the Commission dismissed the theory of harm under which Google would combine its datasets with those of DoubleClick to gain a

[188] CMA, 'Implications of E-Commerce for Competition Policy - Note by the United Kingdom' (n 184) 5, footnote 14.
[189] Christopher Pleatsikas and David Teece, 'The Analysis of Market Definition and Market Power in the Context of Rapid Innovation' (2001) 19 International Journal of Industrial Organization 665.
[190] Darren S Tucker and Hill B Wellford, 'Big Mistakes Regarding Big Data' [2014] Antitrust Source, American Bar Association 7 <http://papers.ssrn.com/sol3/Papers.cfm?abstract_id=2549044> accessed 31 October 2016.
[191] Autorité de la Concurrence and Bundeskartellamt (n 95) 30.
[192] 'History of Search Engines - Chronological List of Internet Search Engines' (2011) *Wordstream*,<http://www.wordstream.com/articles/internet-search-engines-history>.

competitive advantage that could not be matched by its competitors, as it would have neither the ability nor the incentive to do so. However, in 2016, Google amended its privacy policy, deleting the part that promised keeping DoubleClick's database of web-browsing records separate from the personal data Google collects from its many 'free' services. After the amendment, users' activity "on other sites and apps may be associated with [their] personal information in order to improve Google's services and the ads delivered by Google."[193] Therefore, Google did have in the end the incentive and ability to combine both datasets, which sheds light on the significance of data in digital markets and the likely underlying motivation of other mergers that have taken place in digital sectors (such as the *Facebook/WhatsApp* merger).

8. What approaches are being considered and developed by governments and competition authorities in other major economies? What needs to be done internationally and what can be done at the UK level?

8.1 Given the significance of data for the competitive process of digital markets and the fact that a significant portion of the data that is collected online from users is personal data, there is a considerable overlap between competition and data protection law.

8.2 Competition authorities in general, and the Commission in particular, have traditionally not considered data protection issues to be relevant for competition law. In its *Facebook/WhatsApp* merger decision, the Commission stated: "[a]ny privacy-related concerns flowing from the increased concentration of data within the control of Facebook as a result of the Transaction do not fall within the scope of the EU competition law rules but within the scope of the EU data protection rules."[194]

8.3 However, this stance has been slowly changing recently. Some competition enforcers have begun to consider the imposition of terms of use noncompliant with EU data protection and/or consumer protection law as an exploitative abuse within the meaning of Article 102(a) TFEU. In particular, in 2015 the Monopolkommission suggested that an exploitative abuse of market power may consist in the exploitation of user data to the disadvantage of users.[195] Subsequently, in 2016, the Bundeskartellamt commenced abused of dominance proceedings against Facebook, on suspicion of having abused its market power by imposing specific terms of service on the use of data, in violation of Data Protection rules.[196] Andreas Mundt, President of the Bundeskartellamt, stated: "Dominant companies are subject to special obligations. These include the use of adequate terms of service as far as these are relevant to the market. For advertising-financed internet services such as Facebook, user data are

[193] Google Inc., 'Privacy Policy – Privacy & Terms – Google' <https://www.google.com/policies/privacy/>.
[194] *Case COMP/M.7217, Facebook/WhatsApp (2014)* (n 162) 164.
[195] Monopolkommission (n 80) 114.
[196] Bundeskartellamt, 'Bundeskartellamt Initiates Proceeding against Facebook on Suspicion of Having Abused Its Market Power by Infringing Data Protection Rules' (2016) <https://www.bundeskartellamt.de/SharedDocs/Meldung/EN/Pressemitteilungen/2016/02_03_2016_Facebook.html> accessed 26 August 2017.

hugely important. For this reason it is essential to also examine under the aspect of abuse of market power whether the consumers are sufficiently informed about the type and extent of data collected."[197]

8.3 In addition, the EDPS has been for a while advancing a shit towards a 'more holistic approach to enforcement' that requires more and closer cooperation amongst competition, data protection and consumer protection regulators.[198]In particular, the EDPS has argued that "privacy and the protection of personal data should be considered not as peripheral concerns but rather as central factors in the appraisal of companies' activities and their impact on competiveness, market efficiency and consumer welfare",[199] given that "consumers are also data subjects, whose welfare may be at risk where freedom of choice and control over one's personal information is restricted by a dominant undertaking".[200] Therefore, "it may be necessary to develop a concept of consumer harm, particularly through violation of rights to data protection, for competition enforcement in digital sectors of the economy".[201] Relatedly, a joint report issued by the Autorite de la Concurrence and the Bundeskartellamt argued that "[d]ecisions taken by an undertaking regarding the collection and use of personal data can have, in parallel, implications on economic and competition dimensions. Therefore, privacy policies could be considered from a competition standpoint whenever these policies are liable to affect competition, notably when they are implemented by a dominant undertaking for which data serves as a main input of its products or services. In those cases, there may be a close link between the dominance of the company, its data collection processes and competition on the relevant markets, which could justify the consideration of privacy policies and regulations in competition proceedings."[202]

8.4 On an international level, given the cross-border nature of most digital markets and the overlap between data protection/consumer protection and competition issues arising from the competitive process, close cooperation amongst regulators of these fields of law from different countries is warranted. In this connection, in 2016 the EDPS proposed the creation of a Digital Clearing House to bring together agencies from competition, consumer and data protection areas that are willing to share information and discuss how best to enforce th rules within their remit in digital markets.[203] Subsequently, on 14 March 2017 the European Parliament adopted a resolution on 'fundamental rights implications of big data: privacy, data protection, non-discrimination, security and law-enforcement', which included a call for "closer cooperation and coherence between different regulators" and endorsed "the establishment and further development of the Digital Clearinghouse as a voluntary network of

[197] ibid.
[198] EDPS, 'Preliminary Opinion of the European Data Protection Supervisor. Privacy and Competitiveness in the Age of Big Data: The Interplay between Data Protection, Competition Law and Consumer Protection in the Digital Economy' </data-protection/our-work/publications/opinions/privacy-and-competitiveness-age-big-data_en> accessed 27 April 2017.
[199] ibid 26.
[200] ibid 31.
[201] ibid 32.
[202] Autorité de la Concurrence and Bundeskartellamt (n 12) 23–24.
[203] EDPS, 'Opinion 8/2016: The Coherent Enforcement of Fundamental Rights in the Age of Big Data' <https://edps.europa.eu/sites/edp/files/publication/16-09-23_bigdata_opinion_en.pdf>.

enforcement bodies [that] can contribute to enhancing their work and their respective enforcement activities and can help deepen the synergies and the safeguarding of the rights and interests of individuals".[204] The first meeting of the Digital Clearing House was held in Brussels on 29 May 2017.[205]

8.5 In the UK the CMA is aware of the challenges arising from the cross-border nature of many digital markets and of the increasing intersection of the competition, consumer protection and data protection laws, and holds the view that considering issues at a purely national level or through a single 'policy lens' is the wrong approach.[206] The CMA already works with peer regulators, in the UK and overseas, to promote the coherent development of law and policy (in forums such as the OECD, UNCTAD, and European competition and consumer networks).[207]However, the imminent departure of the UK from the EU is likely to impair the CMA's collaboration with EU Member States' authorities, the EU networks of regulators and the Commission. The UK Government should ensure that the CMA is able to continue cooperating with them after exiting the EU.

[204] European Parliament, 'European Parliament Resolution of 14 March 2017 on Fundamental Rights Implications of Big Data: Privacy, Data Protection, Non-Discrimination, Security and Law-Enforcement' para R <http://www.europarl.europa.eu/sides/getDoc.do?type=TA&reference=P8-TA-2017-0076&format=XML&language=EN>.
[205] EDPS, 'Big Data & Digital Clearinghouse' (*European Data Protection Supervisor - European Commission*) <https://edps.europa.eu/data-protection/our-work/subjects/big-data-digital-clearinghouse_en>.
[206] CMA, 'Written Evidence IRN0100 - Competition and Markets Authority - House of Lords Select Committee on Communications: The Internet: To Regulate or Not to Regulate?' (May 2018) para 37 <http://data.parliament.uk/writtenevidence/committeeevidence.svc/evidencedocument/communications-committee/the-internet-to-regulate-or-not-to-regulate/written/83418.html>.
[207] ibid.

Evidence to UK Government Digital Competition Review

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7 December 2018

[Email redacted]

We welcome the opportunity to respond to the consultation. We would like to draw your attention to the two publications listed below that are relevant to the panel's work. We have chosen to respond to questions 1, 7, 8 and 10, drawing on current research in the Department of Media and Communications at the LSE.

Background. Research on the Tech Giants at LSE

This submission draws on evidence from (i) the report of the *LSE Commission on Truth, Trust and Technology*, an independent commission that reported in November 2018 and (ii) the volume: *Digital Dominance: The Power of Google, Apple, Facebook and Amazon.* (Oxford University Press, May 2018). The focus of this submission relates to the importance of wider social externalities associated with digital platforms, and in particular their impacts on the media system and the quality of news and information.

The LSE Commission on Truth, Trust and Technology's report, *Tackling the Information Crisis*, calls for the establishment of an independent agency that would work closely with Ofcom and the Competition and Markets Authority to monitor the level of market dominance and the impact of platforms on media plurality and quality.

Competition, negative externalities and online harms

It is by now a cliché to call for the 'tech giants' to be 'broken up'. There are, however, few detailed policy proposals under consideration regarding just how to do that. One argument for such a break-up – or the intermediate stage of structural separation where the businesses would be separated into independent units – is that it would provide an opportunity to ensure that organisational structures provide incentives to address the 'information crisis' – the negative externalities associated with a decline in the quality and reliability of news and information. A lively debate is

currently raging around the world about structural remedies and the extent to which it is possible or desirable to apply them in one country. In many cases, however – including in an independent review commissioned by the UK Treasury – the focus is explicitly not on the wider social and political implications of platform dominance; it is only on the economic aspects.

The difficulties of demonstrating anti-competitive behaviour in the platform market are considerable because the platforms offer their products to 'consumers' for 'free', although it has been argued that this is an inadequate block to competition policy intervention if the company's dominance has other wider negative effects.

Platforms are operated as multi-sided markets that give their operators the power to cross-subsidise between different sides of the market. Under these conditions, price may not be the best proxy for indicating if a market is functioning well and indeed, whether citizen or social welfare is being enhanced. It is widely recognised now that a new approach is required. This applies in terms of the thresholds of permitted dominance (we might want a lower threshold, as with the rule adopted on media plurality) and to the kinds of remedies applied. Structural solutions in the context of mergers and assessments of market dominance could result in behavioural or structural outcomes that address specific harms associated with platform dominance. This could include governance arrangements that apply to specific harms and innovative new forms of structural separation such as separating advertising from editorial functions.107 These could incorporate procedural innovations (such as the administration of public interest tests) into a merger regime or into considerations of market dominance and harms.

These solutions would be complex – although by no means impossible – to implement on a nation-by-nation basis, and it is not yet clear which of them or what combination of them is necessary. They should be taken seriously as policy options that may be needed, should voluntary measures (many of which could have the same institutional effect) not be successful. Questions of separation and Chinese walls should – as Jonathan Zittrain suggests – consider the problems created by misinformation alongside the economic competition issues. A response to the need for independent oversight of content moderation and to the substantial market dominance of a small number of digital platforms can be undertaken in a variety of ways.

There are regular calls for alternative platforms to be created, for example, by the BBC, but in addition to demonstrating demand sufficient to justify public investment, the cost would be considerable even if the BBC or another public sector entity could command the skill and capital to rival the existing platforms. Given the first mover advantages and sunk costs, dislodging dominant players is likely to be hugely difficult, even if users did switch on the basis of ethical considerations, an assumption for which there is scant evidence[1]. 'Ethical' platform alternatives exist now and they are slow to grow beyond their niche user communities. The investment in gaining and retaining the attention of users means that switching costs for users may be high. Even if users did switch to a new entity, it is unlikely to grow to scale.

Nevertheless, competition policy could be used to remove barriers to competitive entry by alternative platforms and to address who owns the data generated by platforms and the leverage of platforms in secondary markets such as advertising or data services. Competition policy is evolving and it offers a policy tool alongside other potential measures which may be needed to increase the accountability and transparency of platform company operations.

[1] https://pdfs.semanticscholar.org/ab71/a9d675994415aaec3f2970a0e3ee5cf84226.pdf

Market structure will also impact on the ability of self-regulation to respond to online harms and negative externalities. Voluntary self-regulatory responses often require coordination between companies vertically along the value chain, horizontally between competing firms and diagonally between companies. Many of these companies are involved in zero-sum competition for market share and revenue, and collaboration is structurally difficult. It is difficult to imagine decisions taken with altruistic, public interest benefits as an objective, unless a wider framework of credible rules and incentives is established in law. There are multiple potential pitfalls. For example, platforms may use various forms of trust-marking and tagging to exclude content of competitors or impose contractual terms to the disadvantage of content providers. It is well established that such forms of self-regulation can raise barriers to market entry and reduce the overall level of competition in the market.

Responses to the consultation questions follow:

1. What are the emerging benefits and harms from digital markets such as social media, e-commerce, search, and online advertising tending towards only one or a small number of big firms?

Patrick Barwise and Leo Watkins have conducted a review of competition dynamics in platform markets in the volume Digital Dominance (Moore and Tambini, eds, 2018). They find that the structural features of digital platform markets lead to a tendency to concentration and dominance and that in global and national terms the tech giants enjoy the benefits of various forms of 'lock in'. This is a conclusion that is now accepted in the literature on platform dynamics: the problem is not: "will dominance emerge?" but whether that dominance is harmful to competitive entry.

In the same volume, Lina Khan shows how Amazon has achieved dominance despite price based interpretations of consumer harm and argued for a wider general theory of harm in relation to competition. This consultation, by excluding wider negative social externalities associated with dominant platforms is in danger of replicating the narrow view of consumer welfare that is described by Khan as at the root of the weakness of these models.

In most cases, it is the fact of dominance itself that exacerbates online harms such as disinformation, hate speech and addictions because of the much-increased difficulty of consumer switching and the lack of competitive constraint on those harms and negative externalities

The consumer welfare harms associated with this dominance are sometimes hard to demonstrate, particularly where they are accompanied by the provision of 'free' services with an apparently high level of consumer surplus. However these 'free' services by their very nature are accompanied by a data harvesting and targeted advertising model that is associated with the undermining of consumer autonomy and choice and considerable potential detriment to the user. Because of first mover advantage, lock in, high switching costs and the leveraging of personal data, it is extremely difficult for users to switch between social media services.

7. What tools does competition policy need to deal with issues in the digital economy in a sufficiently timely,

effective and far-sighted manner? To what extent are these in place in the UK?

Specifically:

A. What is the appropriate approach to mergers and takeovers in digital markets – what are the key challenges and how should they be addressed?

The UK needs a sector-specific media public interest regime for media mergers, and this should apply also to social media and/or platform services. Under the current regime in the Communications Act and the Enterprise Act specific rules apply to mergers in the radio and television sectors. But if, for example Facebook or another powerful platform company decided to bid for a newspaper or a broadcasting licensee, ownership rules, particularly since the revocation of foreign ownership rules, would not be a barrier to such a purchase.

Given the political and democratic sensitivity of such a potential transaction, and its impact on the well-established public policy objectives of media diversity and plurality, and the integrity and legitimacy of elections, new and specific rules on cross ownership between major platform gatekeepers and other media are required.

What is the appropriate approach to antitrust enforcement (cartels, vertical restraints and abuse of dominance) in digital markets – what are the key challenges and how should they be addressed? We would welcome specific proposals for changes to institutions, policy or its implementation under any of these headings. Please provide any evidence for your views demonstrating how changes would benefit consumers and the economy in response to these questions.

We are at an early stage in establishing a coherent system of restraint on the platform companies' competitive practices. Ultimately the goal will be a sector specific regime that not only deals with dominance and the abuse of dominance, but introduces incentives for those companies to deal with the online harms that result from their services.

8. Are there other policy changes beyond traditional competition tools that could facilitate entry and thus improve competition and economic outcomes?

For example, you may wish to consider options for sector-led initiatives or regulation to make data more open, portable or interoperable between different platforms, or standardised in format if these would enable more effective competition in digital markets?

Again, in relation to policy changes beyond traditional competition tools, we would welcome specific proposals for changes to institutions, policy or its implementation. Please provide any evidence for your views demonstrating how changes would benefit consumers and the economy in response to these questions.

Much of this is about enforcement. The data portability requirements of the GDPR (Art 20.) require that data controllers make possible the downloading and portability of personal data which should

offer a constraint on the leverage of data into competitive advantage. (See Graef 2018[2] for a discussion of data and competition). Ensuring that citizens and consumers are able to switch requires strict enforcement, and perhaps further standard setting by government as regards open data formats, to ensure that the right to data portability becomes a constraint on the competitive advantage of social media companies with a large user base.

10. Are there other issues you consider that the review should be considering, given its focus on competition in the digital Economy?

This consultation has attempted to carve out a separate space for narrow 'competition' concerns. Analytically separating these 'pure competition' questions from the positive and negative social externalities that result from the increasing role that powerful digital platforms play in our lives has the virtue of simplicity and measurability. However there is a danger that such a narrow view perpetuates a technocratic approach to the regulatory questions and a replication of a narrow consumer harms paradigm.

The essays in the volume Digital Dominance (Moore and Tambini, eds, Oxford University Press, 2018) lead to the conclusion that the attempt to strip out and separate social value questions from a narrow notion of competition is a mistake. The government is also consulting on Online Harms and will publish on the Digital Charter early in 2019. These wider regulatory concerns do need to be wrapped into a single policy process that is transparent and has a clear remit to consider competition and content concerns together.

The LSE report of the Truth, Trust and Technology Commission similarly adopts a system wide view, and the implications of media change for the quality of news and information that circulates in society. Whilst in economic terms news is a small part of the wider platform economy, the question of disinformation and misinformation has the potential to have much wider direct and indirect impacts for citizens and consumers.

In short, there is a need for an over-arching discussion of the public interest concerns alongside the questions of market structure and competition. Because of the sensitive issues of freedom of speech and public opinion involved it is crucial that this process has cross party and civil society input and a high level of civil society input.

[2] When data evolves into market power: Data concentration and data abuse under competition law
Graef, I. 2018 Digital dominance: The power of Google, Amazon, Facebook, and Apple. Moore, M. & Tambini, D. (eds.). Oxford University Press, p. 71-97.

Competition Enforcement and Stakeholder Remedies in Digital Markets

Submission to the Digital Competition Expert Panel Call for Evidence on Competition in the Digital Economy

Michelle Meagher, Independent Legal Consultant

Thank you for the opportunity to comment on the Expert Panel's independent review of the state of competition in the digital economy. This submission will primarily respond to question 7 from the consultation document, relating to the tools needed to deal with challenges in the digital economy, with a focus on remedies.

Challenges in the Digital Economy

There is a general feeling that the public wants something to be done about digital markets. Whilst there has been much debate as to whether this public desire to bring technology companies to heel is warranted, the desire itself is undeniable and it stems from a place of fear. Digital markets have many features that we have seen before, such as network effects, two-sided markets, and switching costs, but they manifest on a scale and with an infiltration into the daily lives of the average citizen that feels less familiar.

The Expert Panel will no doubt draw its own conclusions, based on the evidence it gathers, as to whether there is indeed a problem with digital markets and the way they are regulated. This submission will take the position that there are indeed problems and that they stem from the growing power of technology companies, and therefore fall within the remit of competition.

Two Questions for Competition Policy

For competition policy, two questions have emerged in the wake of the challenges presented by digital markets: (i) assuming there is a problem, what can be done about it?, and (ii) how can any action taken within the competition regime be justified within the existing analytical framework?

The second question invites others, such as what is the existing framework and standard utilised by competition law? And is this standard flexible enough to accomodate the analysis of digital markets? On this point, I would like to submit that competition law has proven itself to be flexible in the past. In the UK, the application of a "public interest" test for competition law is still within the recent memory of many practitioners. Whilst that system had many flaws, and we are right to be wary of a regime prone to political intervention, there is no reason to think we would inevitably return to the "bad old days" of political whim, protectionism and regulatory capture -- we can now approach the balancing of "public interest" considerations armed with the latest

tools of mainstream, and heterodox, economics as well as two decades of experience in analysing anti-competitive harms and procompetitive justifications under the consumer welfare standard.

Further, whilst the concern over legal certainty and the rule of law is important, if we take even just a brief glance over the fence into areas beyond competition law, by reviewing, for example, the UN's universally agreed Sustainable Development Goals or considering the enormous and looming challenges in demography, geography, climate systems, and geopolitical stability that we face on a global scale, we may quickly draw the conclusion that the current debate over regulating big companies in a way that creates future legal certainty for all companies is missing the point -- it is as if there is a tornado coming and we are arguing over the calibration of our barometers.

This submission will therefore focus on the first question, asking what can be done to address the challenges presented by digital markets, which deserves more attention than it has thus far received in the public debate.

What kind of remedies will be effective?

Two remedies that have been popularised in the media are that of "breaking up" the Big Tech monopolies and preventing them from growing further through acquisitions. This is a perfectly understandable position, but this contributor is not hopeful that either policy would prove to be a complete solution to the objectionable conduct. In any case, the US authorities, who may be the only authorities actually able to implement a break-up, are showing no inclination to do so.

This contributor suggests that what may be missing from the discussion is a broader appreciation for the connection between corporate power and corporate responsibility -- two areas that are currently dealt with separately, at least within the prevailing paradigm of market regulation. Antitrust holds companies responsible for their corporate power only in so far as they have the power to control price and output, with the assumption that the absence of such power inevitably leads to maximum consumer welfare. Of course we know that this is not the case, due to the existence of other market failures, which is to say that companies may exploit other features of the market that given them power over consumers but also that they have the power to impact the lives of people outside their capacity as a consumer.

Taking this into account, we can either change the range of factors that may serve as indicators for market power, which goes back to the debate over the adequacy of the consumer welfare standard, or we can change how companies are held responsible for any monopoly power that may be leveraged into other, non-price parameters, through the design of enforcement remedies.

Traditionally remedies have been focussed on reducing concentration, increasing the number or potential number of market participants, and preserving competitiveness in market structures.

These options may prove unworkable or inadequate due to the nature of digital markets, some of which may not lend themselves to a dilution of concentration. In which case we may want to look outside the realm of competition for inspiration.

Overlap Between Competition and Corporate Governance

At the same time that the competition community is searching its soul for the true purpose of competition, in the sphere of corporate governance, academics, practitioners and governments are probing the purpose of the corporation and the adequacy of corporate governance regulation. Whereas the paradigm in antitrust is free market competition and consumer welfare, the paradigm in corporate governance has been, for at least four decades, one known as "shareholder value" -- that is the primacy within the corporate structure of the shareholders over any other stakeholders. The two paradigms share intellectual roots in the Chicago School, with the most prominent proponents of each -- Milton Friedman and Robert Bork -- being being close colleagues. Just as some people are challenging the role of "efficiency" in antitrust analysis, many are now questioning whether the narrow focus in company law on running the corporation exclusively for the benefit of the shareholders has generated harms for workers, communities and the environment.

In corporate governance, this soul searching has led to a series of proposals aimed at increasing stakeholder representation, engagement and influence over company decision making.[1] I would propose that the Expert Panel consider whether similar measures could be incorporated into behavioural-type remedies that might better address some of the concerns raised about digital platforms. For example, the CMA could be allowed to consider whether approval of a merger or dominant practice should be made contingent on the company making binding commitments to protect stakeholder interests.

This does not mean that competition authority would be responsible for balancing the interests of workers, consumers, communities, the planet and shareholders, unless there is clear evidence of abuse of any of these parties, but rather they would oversee the adoption of mechanisms that will protect stakeholder interests by giving them influence over board decisions on an ongoing basis. Such measures would have to be proportionate to the extent of the actual or potential harm.

[1] See for example, Senator Warren's Accountable Capitalism Act in the US, which would require big companies to consider the interests of all stakeholders (https://www.congress.gov/bill/115th-congress/senate-bill/3348/text); the Labour Party's proposal in the UK for 10% of shares in certain companies to be handed to workers (https://www.ft.com/content/4cad1c50-bf59-11e8-8d55-54197280d3f7); the Big Innovation Centre's "Purposeful Company" project (http://www.biginnovationcentre.com/purposeful-company); and the British Academy's "Future of the Corporation" initiative (https://www.thebritishacademy.ac.uk/future-corporation).

The nature of stakeholder remedies

Examples of possible applications of this approach include requiring companies to give workers influence over how profits are spent; companies giving users collective control over their data or access to underlying algorithms; elevating the voice of communities in decisions like where to locate a warehouse or fulfilment centre; board representation for key stakeholder groups; and creating a people's council on AI and blockchain so that stakeholder views are represented as these critical technologies are developed.

Some of the most problematic platform monopolies already have a symbiotic relationship with their users and suppliers, such as app developers, content producers, marketplace sellers, game designers, and "power users", and they may propose their own technological solutions to managing community interests and accountability. It may also be possible to borrow examples from outside of technology. For example, some companies protect stakeholder interests through "Mission Councils", as at Pukka Teas (a subsidiary of Unilever);[2] or by having stakeholder representatives on the board, like at Divine Chocolate, where Ghanaian cocoa farmers are board members;[3] or by committing themselves through their financing, as with Danone's pioneering $2 billion syndicated credit facility in which the company's cost of capital will vary with its environmental and social impact.

Competition Authorities may also bear stakeholders in mind when considering the most appropriate buyer for any divested assets. Hedge funds may be favoured for the lack of competition issues, but they may not given the company the right incentives to protect stakeholders.

Incorporating stakeholder remedies into competition enforcement may have some advantages:

- UK consumers are increasingly engaging with global companies, and this is certainly true of digital markets. This means that no individual National Competition Authority may be able to adequately respond to or contain corporate conduct in these markets. If instead changes were embedded within the company itself then the jurisdictional limits of regulators would be less of a barrier to protecting consumers.
- An additional benefit for regulators, who must constantly evaluate how best to allocate public resource, is that stakeholders, once given formal standing in company decision-making, are well-motivated to hold companies to account. They also generally have more information than the authorities and again are not bound by jurisdictional limits. Stakeholders may therefore have more lasting influence than antitrust agencies, once elevated internally within company governance. Monitoring of the implementation of these remedies cannot, however, be completely outsourced to stakeholders and must be given careful thought at the design stage.

[2] See here for more information on Pukka's Mission Council: https://www.pukkaherbs.com/our-mission/pukkas-mission-council/.
[3] See here for more on the structure deployed in Divine Chocolate: http://www.divinechocolate.com/uk/about-us/inside-divine.

- Digital markets are constantly evolving which makes formulating effective remedies challenging. Stakeholder remedies, however, have the potential to be more responsive. Traditional behavioral remedies work best when it is easy to predict how commercial conditions and relationships between parties will unfold in the future. Instead of a one-off competition remedy that responds to a particular problem at a point in time, governance remedies can create a process for ongoing stakeholder engagement which is flexible, can adapt as markets change, and can lay the groundwork to protect against future economic risks. This would mitigate against the concern that competition investigations take too long to keep up with changes in the market.
- Establishing a system of stakeholder engagement at company or industry level for the biggest players also puts in place infrastructure that may support other potential solutions (such as data trusts or measures to increase interoperability between platforms).

Is the competition authority the right institution to address these problems and enact these solutions? Whilst there are of course other regulators and laws with relevant jurisdiction, including the consumer protection regime, if concerns come to light in the course of an abuse or merger investigation then it would create a gap in enforcement if the competition authority were to do nothing, particularly as other regulators do not have the power to require commitments in the same way that the competition authorities can. Furthermore, no other regulator would necessarily have the in-depth market knowledge and birds-eye view of commercial and stakeholder relationships that the antitrust agencies have as a result of their existing evidence-gathering powers. It may however be desirable for the CMA to pursue the protection of stakeholder interests concurrently with another market regulator, although no such body currently exists in the UK,[4] but in the meantime it may be useful for the CMA to bring in other regulators, either formally or in consultation, when deciding whether to defer to their enforcement.

The UK is a world leader in competition enforcement and in corporate governance, so it would be natural to combine these two areas of expertise or at least bring them closer together. UK company law already requires directors to "have regard to" stakeholder interests in their pursuit of shareholder returns (so-called "enlightened shareholder value"), and a new Corporate Governance Code, applicable to premium listed companies and requiring engagement with stakeholders and corporate reporting on how directors have considered stakeholder interests in company decision-making, comes into effect on 1 January 2019. These same high-standards for corporate conduct can be used in the enforcement of competition law.

[4] The Institute for Public Policy Research has proposed the creation of a Companies Commission to oversee and strengthen corporate governance standards among both listed and private companies. The proposal is for this to be an independent regulator with investigative powers and the power to impose legal remedies. For more information, see here: http://www.ippr.org/read/corporategovernancereform#.

Proposals for the Expert Panel

The overlap between competition and corporate governance has not historically been well-explored therefore the thinking on the topics of this submission is evolving. This contributor would propose as a first step that the Expert Panel hosts a roundtable bringing together experts on antitrust remedies and corporate governance, along with representatives from digital markets themselves. The Expert Panel may also be interested in commissioning a review of global experiences with behavioural remedies that go beyond protecting against price increases for consumers.

The goal of this submission has been to highlight the possibility that in some cases the tools of corporate governance, sensitively integrated with the tools of competition enforcement, may result in better outcomes than competition tools alone, without contorting the bounds of well-established antitrust analysis.

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Re: Response to Call for Evidence

Dear Members of the Panel

the writer started collecting data from the Internet in 2002, and has subsequently used them to author a series of articles.

A first strand of research focussed on the airline market, and shed light on several aspects relevant for the evaluation of the degree of competitiveness in the industry. One article highlighted new ways European low-cost airlines used to implement third degree price discrimination online (Bachis and Piga, 2011). Another provided an evaluation of the price effects of two mergers involving four European low-cost airlines: easyJet/Go, and Ryanair/Buzz (Dobson and Piga, 2013). The compelling evidence suggest that the acquiring firms (easyJet and Ryanair) reduced their fares consistently across the routes previously served by the acquired firms. More importantly, an innovative way to scrape the data from the Ryanair website allowed to unveil some previously unknown aspects of its Revenue Management system (Alderighi, Nicolini and Piga, 2015). Indeed, this is the first paper to show unambiguously that fares increase as the plane fills up, thus warning against an interpretation of fare hikes as instances of price discrimination or market power. New, more recent data, collected from the easyJet website in 2014-2017, are currently being analysed and play a key role in my response to one of the questions in your Call for evidence, with regards to the algorithms that airlines use to update their fares (Alderighi, Gaggero and Piga, 2017; Piga, Alderighi and Gaggero, 2018).

The second strand of research focussed on the pricing activity of hotels and other types of firms in the hospitality sectors (B&Bs, Inns, Aparthotel, etc) operating on the platform of the largest European Online Travel Agent (OTA), Booking.com. Contrary to the general belief that firms on an OTA platform are constantly modifying their room prices, Melis and Piga (2017) actually find that Uniform, not Dynamic, Pricing provides a more realistic description of the pricing approach of the majority of firms on the platform. The impact on prices set by the hotels on the platform following the decision to ban any form of Price Parity Clauses, also known as Most Favored Nations conditions, in France and Italy is analysed in Mantovani, Piga and Reggiani (2017). The evidence suggest that the small responsiveness of room prices to changes in the regulatory environment is again consistent with a sluggishness in room prices' dynamics.

Given this preamble, the remainder of this report will address more specifically the questions 6 and 7 in your Call for Evidence.

Q. 6: How do technologies such as artificial intelligence (AI) and machine learning affect competition and what are their implications for competition policy? Does algorithmic pricing raise new concerns about competition? .

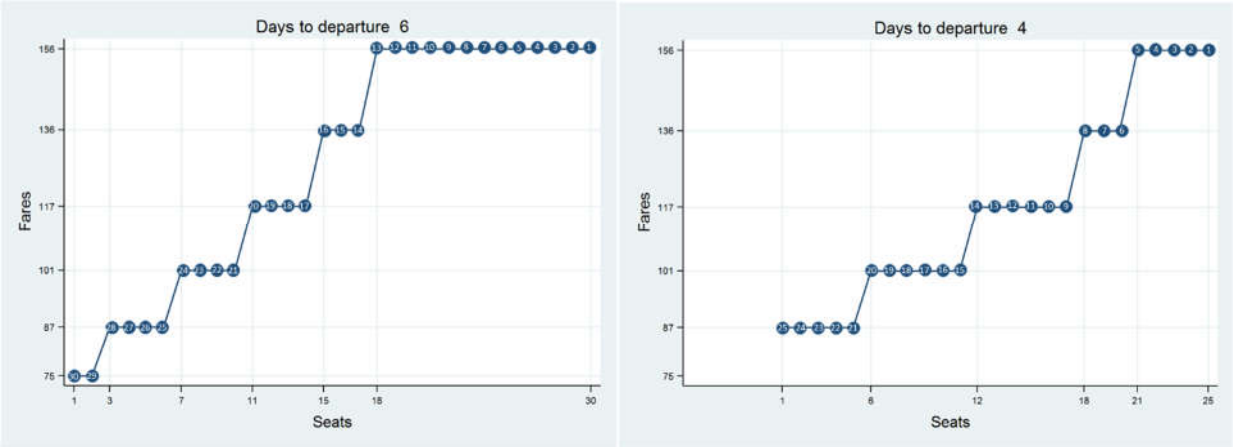
The writer's research did not address aspects of AI or ML, but it has focussed quite extensively on several, previously unexplored, aspects of the pricing algorithm in airline markets.

Piga, Alderighi and Gaggero (2018) explains how the algorithm work, and thus can provide guidance for the investigation of competition policy cases in the airline industry. However, the rationale for its findings can have wider ramifications and extend to other sectors as well. To better clarify the various elements comprising the pricing algorithm typically used in the airline industry, it is necessary to present the main results in Piga, Alderighi and Gaggero (2018) and Alderighi, Gaggero and Piga (2017).

The starting premise is that airlines cannot instantaneously modify fares for the myriad of flights they manage. In practice, airlines set fares using a codified set of techniques denoted under the heading of Revenue Management (RM). The range of these techniques spans from forecasting the parameters of future demand based on historical data to the use of mathematical models to optimize total flight revenues and inventory control. Belobaba (2009, p.91) explains that ``RM systems revise their forecasts and booking limits at regular intervals during the flight booking process, as *often as daily in some cases''*. That is, revisions appear not to be constantly made. Moreover, airlines operate multiple distribution channels (e.g., Amadeus and Sabre) plus their own website. The interconnection of these multi-channel operations enhances the carrier's extremely complex problem of having to manage, simultaneously, hundreds of thousands of flights over a long time span. In other words, the constant reprogramming of the pricing for all these flights would necessitate an unrealistic amount of computing power, if every time the full RM approach has to be recalculated. The complexity of this problem provide a logical reason for the existence of long spells during which the structure of fares remains unchanged, i.e., static.

The impossibility to update fares instantaneously and constantly to obtain bespoke ones, leads to a second characteristic of the pricing algorithm. That is, a fundamental aspect of RM consists in the definition of an increasing sequence that assigns a fare, starting from the cheapest and ending with the dearest, to each seat. Such a sequence is stored in the database of the Reservation Management System and remains unchanged for the duration of the static pricing spell. Therefore, contrary to common belief, the airlines do not set a single fare, but a complete sequence, which we show to be non-strictly monotonically increasing. Two examples, concerning the same flight at different days to departure, are reported in Figure 1.

Figure 1 -A typical structure of fares in a Low-Cost flight



Fares are reported on the Y axis, and the X axis reports the position of a seat in the sequence. As an example, the left panel contains a fare sequence observed six days before a flight's departure, and the right panel the sequence for the same flight, posted four before departure. The fare of the seat at the extreme left corresponds to the fare offered to a consumer that issues a query for a single seat.

The first property to notice is the step-wise shape of the sequence. Two seats are assigned the fare of 75, the next four the 87 fare, etc. That is, each seat is allocated to a "booking class", each with a given (but variable over time) number of seats. A second property is the strong

stationarity of the fares' levels of each "booking class" in the sequence, which tend to be used over a flight's entire booking period. Third, in Figure 1, over two days five seats were sold, and the fare moved from 75 to 87. The example above illustrates a crucial aspect: the fare does not change because "time is passing" but, as shown in Alderighi, Nicolini and Piga (2015), because "the flight is filling up".

The adoption of fare sequences is pervasive. As discussed in Alderighi, Gaggero and Piga (2017), all the flights (more than 40 thousands) operated by the main Low-Cost carriers worldwide (easyJet, Ryanair, and Southwest in the USA) adopt a fare sequence that automatically leads to higher offered fares as the flight fills up. Using a different dataset, containing mostly intra-European routes and some routes between the UK and France, Piga, Alderighi and Gaggero (2018) deal with analogous evidence. Both articles discuss the fact that the sequence is a consequence of the impossibility to update fares instantaneously: if it were possible, then sequences would not be necessary.

Indeed, a sequence of fares serves, among other things, one practical insurance purpose: if the same fare were assigned to all the seats, but instantaneous adjustment is impossible, then the carrier would run the risk of under-selling its full capacity. If, as a remedy, only a few seats were made available on the system at a single low fare, once they sell out, no more seats could be sold, leading the system to reject possible subsequent higher bids' requests, until the next period.

Most importantly, the adoption of fare sequence, and their evolution over time, is independent of market structure and concentration (Alderighi, Gaggero and Piga, 2017). In other words, the airlines adopt similar pricing methods regardless of whether they face tough competition on a route, or they are the only firm in a market.

The period during which the structure of the sequence remains unaltered defines a Static Pricing spell. Note that, because seats can be sold, during the Static spell it is possible that the price offered to travellers increase, as one "booking class" sells out. Piga, Alderighi and Gaggero (2018) report evidence indicating that the average duration of a static spell is 33 hours, although longer spells are found depending on a flight's load factor, its selling rate and the time to departure. Loosely speaking, spells are longer when the flight is fuller than average, but they get shorter as the departure time nears.

Dynamic Pricing corresponds not to a change in the offered price (which may be simply a movement along the sequence, as one "booking class" is sold out) but to a modification of the sequence. As already said, the price levels tend to be unchanged during the whole booking period. Therefore, the change in the sequence involves shifting seats to lower and upper price classes. There is one important message here: dynamic pricing is not necessarily about increasing prices, but also about lowering them!

Given the high frequency with which sequences are observed in Piga, Alderighi and Gaggero (2018), these authors can control when each type of movement is implemented by the carriers. It turns out that downward shifts are more likely implemented overnight, that is, when revenue managers are not working. This suggests that the carrier determines, using automatic update procedures that run overnight, whether to move some seats to a lower price class. Shift upward of fares are instead more likely observed during the working daytime period: they probably are flagged by the night procedure, and left to be approved by the revenue manager analyst.

The role played by revenue analysts is indeed central to answering your question whether algorithmic pricing raises new concerns about competition. On the one hand, lowering fares is largely automated; on the other, increasing them beyond the progression along the sequence, requires human approval. Based on the current state of affairs, the evidence suggests that algorithmic pricing does not seem to pose any additional concerns about competition.

However, the analysys of airline pricing based on sequences of fares can shed light on possible exploitation of market power by carriers. Piga, Alderighi and Gaggero (2018) use the case of Air Berlin's demise in October 2017, where travellers complained that Lufthansa's fares shot up on some routes where Air Berlin operated, leading to an investigation by the Germany's Federal Cartel Office (FCO). Lufthansa denied changing its pricing methods, arguing that its fully-automated booking system was simply responding to a spike in demand following the Air Berlin collapse and displaying higher average prices as a result. The analysis based on fare sequences suggests the following considerations. On the one hand, Lufthansa might not be accused of artificially increasing fares if the spike in demand may have led to *i)* fares increases consistent with movements along the fare distribution; and *ii)* to fewer downward movements. On the other, the boost in demand could also have been met by changes of the fare sequences where seats were moved upward, i.e., the carrier may have harmed consumers by deliberately charging higher fares after Air Berlin's exit. Without proper information about the evolution of the sequence of fares, distinguishing between these two possibilities is not feasible.

Another sector which is often deemed to be applying highly sophisticated revenue management techniques is the hotel sector. The evidence is far from conclusive, but it certainly indicates a feature similar to the one discussed for the case of airlines. That is, hotels' managers are not constantly changing their room prices. The data collected from hotels and other lodging firms affiliated to the Booking.com's platform, indeed points towards spells of static pricing that are much longer than in the airline industry, and that last for weeks and months. That is, a room price posted 90 days before the stay, is very likely to be still valid 60 days on or even later. This is the case for hospitality firms in the Mediterranean area, as shown in Melis and Piga (2017) and Mantovani, Piga and Reggiani (2017), as well as for hotels in the French cities during the 2016 European football Cup (Nicolini and Piga, 2018).

One aspect that is often overlooked in the way Online Travel Agents platform work, is that the platform owner is not responsible for the room price, which are set and managed by each affiliate firm. Thus, the evidence indicates that the simplicity with which these firms manage their price also reveals the absence of an algorithmic pricing system, for the largest proportion of these firms.

However, it might be possible that the platform owner can implement various forms of online price discrimination. For instance, detect whether the potential customer is issuing a query from a particular country, and increase prices accordingly. This would invalidate the data collection; therefore, a check was carried out while data was being gathered, both in the case of Booking.com, as well as the airline industry. The same query was carried out, at the approximate same time, from two computers, one located in the UK, and one located in another EU country. The result has always been that the same price was posted online, regardless of the origin of the query. Another check involved using different devices (Windows and Apple): no differences emerged. Checks of this kind were performed during the full data collection period, leading to the conclusion that at least for the airlines and the hospitality platform we surveyed, the fares and prices come from the same database, and that no discrimination based on country of the query or type of device was detected. Similarly, it could be possible that the data collection is affected by the large number of queries issued by one computer (cookie effect). Also in this case, a simple check is to launch a query from a computer not used for data collection, and check whether the same outcome is returned. Our experience has always been that the posted prices are not affected by the number of queries issued.

SUMMARY OF MAIN FINDINGS.

1. Airlines cannot update their fares instantaneously;
2. They set sequences of fares, specifying a fare for all the seats on a plane;

3. These sequences are grouped in price classes, with each seats allocated to one class;
4. Once a class runs out of seats, the offered fare increases to the next class price level;
5. The sequence for each flight remains on the airline's Reservation System unaltered for a varying period of time, which is on average about 33 hours long;
6. All flights use sequences;
7. Sequences are used regardless of the route's market structure; collusion would call for a differentiated approach to the design of the sequences, and their dynamics, based on market conditions;
8. When the sequence is altered, there is a difference as to whether the alteration involves a decrease or an increase of the fare of some seats;
9. Fare decreases are part of an automatic update procedure, mostly carried out overnight;
10. Fare increases are predominantly carried out during the day, thus indicating a strong role for a human decision-maker;
11. This indicates a diminished, or no role, for algorithmic pricing as a facilitating device for collusion;
12. Static pricing is even more pervasive in the hotel and hospitality sector;
13. The firms affiliated to a platform tend to use very basic revenue management tools;
14. Both the airlines, and the Online Travel Agent platform we surveyed, do not engage in forms of price discrimination based on frequency of queries issued by a computer (cookies), or the country from where the query originates.

Q7.What tools does competition policy need to deal with issues in the digital economy in a sufficiently timely, effective and far-sighted manner? To what extent are these in place in the UK?

As far as tools are concerned, the recent announcement by the UK CMA to build and strengthen a division aimed at retrieving and analysing data from digital markets is a step in the right direction. It is also in line with what other Competition agencies in Europe are doing, e.g., Germany and France. Retrieved data can be useful in the investigation for the approval of mergers and takeovers, and also to assess the consequences of decisions, as in Dobson and Piga (2013) and Mantovani, Piga and Reggiani (2017).

Such a "Big Data" strategy poses challenges that need to be addressed.

First, collecting data may prove a fruitless exercise without a proper data collection design, which strongly depends on the research questions one is interested to address. For instance, the decision to retrieve data for the full sequence of fares arises from an extensive knowledge of how the airline industry works.

One possible solution is for Competition agencies to consult with industry experts before starting the data collection in a specific industry.

Second, the source of the data matter. For instance, in the hospitality sector, comparing price differences between an aggregator such as Kayak and a single platform (Expedia or Booking.com) has to be taken with a bit of caution, because the data from aggregators may not be very up to date.

Third, knowledge of the IT technology that enables the interconnection of data from different sources (online travel agents's platforms, aggregators, airlines, hotels, etc) has to reside within the Competition authority, and needs to be used to design the data collection.

Fourth, and finally, the Big Data approach needs to be applied as extensively as possible, and be used in as many digital markets as possible. It can become a strong deterrent for firms

to engage in anticompetitive behaviour which is facilitated by the use of algorithmic pricing and machine learning.

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From: Dr Carlo Reggiani

Manchester, 20th November 2018

To the Digital Competition Expert Panel:

Dear Panel Members,

Thank you for inviting me to the very interesting Round Table discussion of October 30th, 2018.

I would like to supplement the discussion with this statement, which collects some reflections on the debated topics and on the questions that the Panel is trying to address. I tried to stick to the evidence based on my own and related research, supplemented by some knowledge on these subjects. I discussed these themes with my co-authors on the "Booking.com pricing project", Andrea Mantovani (Univeristy of Bologna), Caudio Piga (Keele University), Yevgeniya Shevtsova (University of Liverpool), in the "data brokers project", Yiquan Gu (University of Liverpool) and Leonardo Madio (Universite' Catholique de Louvain) and with other participants in the roundtable after the meeting: the views, however, are exclusively my own. The following question numbering relates to the "Call for Evidence Questions" document provided at the roundtable discussion.

Question 7

What tools does competition policy need to deal with issues in the digital economy in a sufficiently timely, effective and far-sighted manner? To what extent are these in place?

B. What is the appropriate approach to antitrust enforcement (cartels, vertical restraints and abuse of dominance) in digital markets – key challenges?

I will focus on ***vertical restraints*** and, in particular, on Price Parity Clauses (PPCs). These are a form of Most Favoured Nation clause used by online platforms. In practice, the platform asks the seller, who sets prices on different sale channels, to be guaranteed the lowest price (wide PPC). In a weaker sense, a narrow PPC requires the seller to set a price on the platform no higher than on the direct sale channel (e.g., the seller's website).

What is the effect of banning PPCs? In Mantovani, Piga and Reggiani (2018a) we provided evidence from Booking.com and the EU case: between 2015 and 2016, European antitrust authorities and the Commission intervened at different stages to remove PPCs. The main finding is that such removal of PPCs (first only narrow, then all types) did ***not*** have a significant ***short run effect*** on the prices of client hotels ***on the platform***. The methodology exploits data from rather homogeneous Mediterranean tourist destinations that experienced policy changes on different dates, enabling a difference-in-differences (D-in-D) design. The pricing data are extremely detailed: we track the price of a room, fixing all of its characteristics as available on Booking.com, through a rather long booking period.

Implications of the findings. The lack of a price response of hotels may be surprising at first, but it is compatible with evidence from a European Commission survey on hoteliers (European Competition Network, 2017). The findings can be also be rationalised in a number

of ways. For example, as agency fees are unlikely to react promptly, ***short run*** price changes may not necessarily be expected ***on the platform***. Moreover, the lack of managerial and pricing capabilities may make price stickier than expected for a wide share of establishments. The main ***message***, however, is that if a prompter response is to be expected, careful consideration should be given to: 1) the characteristics of the sector targeted for antitrust intervention; and 2) ***adequate information*** needs to be provided to the ***stakeholders*** in advance of the policy implementation. The survey evidence recalled above (European Competition Network, 2017) suggests that the majority of the interviewed hoteliers were unaware of the policy changes and, even the ones who were aware, had a number of concerns about changing their price behaviour as a result of the policy interventions. To sum up:

Observation 1: the speed and effectiveness of antitrust intervention in digital markets should consider the trade-off between prompt action and stakeholders awareness and preparation, if an effect is desired in the short-medium run.

It is important, however, to also recall what our evidence does not exclude:

1) A ***medium run*** response, particularly in terms of ***increased differential pricing*** between the platforms and the direct channel is possible. Preliminary evidence in this sense is provided by Ennis, Ivaldi and Lagos (2018), whose work is however still in progress and uses less precise data than ours. In fact, they possess information on the more aggregate Revenue per available room/Average daily room rate, performance metrics typically used in the hotel industry, provided to them by a large multinational chain. Evidence from Kayak.com, a metasearch engine, on the German ban of all PPCs suggests effects in terms of increased use of the platforms by client hotels (Hunold, Leitenberger, Schuttler and Kesler, 2018). We briefly surveyed this recent and very dynamic research area in Mantovani, Piga and Reggiani (2018b).
2) In the medium long run, we may be more interested in the ***dynamic incentives*** of platforms. Whereas we cannot provide causal evidence, Mantovani, Piga and Reggiani (2017) provides a number of examples pointing at the fact that Booking.com has increased the pace of "innovation" through changes to its website, additional services to consumers and client hotels. This faster paced innovation took place in parallel with the main decisions in the antitrust case on Booking.com. In the paper, we propose a simple theoretical model that suggests that platforms may compensate not being able to use PPCs by introducing new features to their website. The effect is to further differentiate their offer and to make consumers and sellers more loyal and keen to use the platform as a result.

Observation 2: whereas the evidence is still very weak, it is plausible that banning PPCs from the main EU online travel platforms may have increased the speed of innovation and increased the attempts of platforms to make both sides of the market more loyal.

Finally, I would like to recall some ***evidence on other related cases.*** Chen and Liu (2011) investigate the effects of Most-Favored Customer (MFC) clauses on price competition among major electronics retail platforms. Unlike other markets (e.g., the health sector), prices diminished after platforms adopted these clauses. Ater and Rigbi (2018) evaluate the

impact of a price transparency regulation imposed on Israeli supermarkets. Using a D-in-D approach, they document a price drop resulting from this mandatory online disclosure. De los Santos and Wildenbeest (2017) also employ a D-in-D approach to empirically investigate how different supplier-platform vertical relationships may affect retail prices. They exploit the US antitrust intervention in the ***e-book sector*** that shifted back the ***pricing power from the e-book publishers to the distributing platforms***. They show that this decision led to ***sharp price decreases***.

Question 6

How do technologies such as AI and ML affect competition? What are the implications for competition policy? Is algorithmic pricing a concern for competition?

There is a developing economics literature on algorithmic pricing, which complements the more developed law and economics one. Syntheses can be found, for example, in Calvano, Calzolari, Denicolo and Pastorello (2018) and Schwalbe (2018). The first paper, in particular, basically suggests that ***potentially*** second generation AI pricing algorithms may be able to successfully sustain very high price, to the damage of consumers. My reading from those papers and other economics analyses of the issue is that such a possibility is still quite far away in time: the examples of successful algorithmic collusion are based on rather stylised models, very far from the complexities of a real world market environment. Computer sciences experts have also suggested that communication between algorithms is only in its infancy and unlikely to be particularly sophisticated. Despite there are issues worth monitoring and that may become a concrete concern in the future (e.g., the rather frequent interaction of algorithms in setting prices), my evaluation is that this issue is not a first order concern for today's competition policy.

This view is further corroborated by the evidence we are generating through the "Booking.com pricing project" and the related work of my co-author, Claudio Piga, on airline pricing. Focusing on the lodging sector, a very striking piece of evidence is that establishments of all types are rather limited in their capabilities to implement sophisticated pricing. For example, in a paper (Mantovani, Piga, Reggiani and Shevtsova, 2018) we analysed the adoption of a simple and relatively cheap tool offered by Booking.com to make the room prices offered more "catchy": in 2016 the platform moved from a yes/no deal indication, to a system where a reference price is displayed and cancelled with a bar, complemented by an indication of the percentage price discount. Our data reveal the importance of managerial skills and pricing capabilities to ***even*** adopt a rather simple new device, as the one introduced by Booking.com. More generally, our data suggest that hotels and other establishments adopt very simple pricing strategies. B&Bs, lodges and independent hotels very often adopt a uniform pricing strategy: once they establish a price for a night at the start of the booking period, they stick to it until the day before the stay. Hotels affiliated with large chains tend to be only slightly more sophisticated, in the sense that they can afford and have the managerial resources to use Revenue Management software packages. As a result, their prices change through the booking horizon, but these are just reflecting capacity allocation rather than a fully dynamic re-optimisation of the prices. As such, it is rather unlikely that in the near future even large hotels from big chains may develop and employ sophisticated algorithms that can tacitly learn to coordinate on high prices. Similar insights are provided by, e.g., Alderighi, Nicolini and Piga (2015) and Alderighi, Gaggero and

Piga (2016), on the Revenue Management strategies of airlines. Clearly, these conclusions are based on evidence on only two industries. However, we note that it is usually assumed that firms in these sectors can and do use complicated pricing strategies, whereas in practice it seems that rather mechanical rules are employed.

Observation 3: the evidence from markets like the lodging sector suggests that most firms are using simple pricing strategies and often stick to "uniform pricing", despite having the possibility to price more sophisticatedly.

Question 3

What effect can the accumulation and concentration of data within a small number of big firms be expected to have on competition?

For competition policy purposes, I think it is important to draw a distinction between ***data brokers*** and the ***big tech companies***: all gather and do business by accumulating large amounts of data, but the competitive implications are different.

With regard to ***data brokers***, in a recent paper (Gu, Madio and Reggiani, 2018) we looked at the nature of data held by these firms and the practice of sharing them. Data sharing is not only a worry from a privacy perspective, but it may also raise competitive concerns. In particular, when the datasets held by different data brokers contain ***overlapping*** information, data brokers may have an incentive to share them. The intuition is simple: the overlap of data would enhance competition between data brokers, as they try to sell a more homogeneous product to a downstream retailer, who can use the data to increase its profits. Sharing data, then, will soften the competition between brokers serving downstream client firms. Perhaps counterintuitively, concerns about sharing and interference on competition do not arise when datasets are complementary: data brokers are not in direct competition in that case and sharing may be only driven, for example, by efficiency gains in processing and summarising the information contained in the datasets.

A big open question is whether big tech firms, who are already acting as de-facto data brokers, will take over the sector. For example, there may be an incentive to acquire and vertically integrate with the existing large data brokers currently operating in the market.

Observation 4: data sharing may lead to concerns that go beyond privacy and fall in the domain of competition policy.

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Consultation Response

HM Treasury Digital Competition Review

Bournemouth University

Response from Sevil Yesiloglu Lecturer in Digital Marketing Communications

3.1 Understanding the effects of digital markets

1. What are the emerging benefits and harms from digital markets such as social media, e-commerce, search, and online advertising tending towards only one or a small number of big firms?

We would particularly welcome evidence on:

- *the extent to which some digital markets appear to tend towards only one or a small number of firms;*
- *the key drivers of this trend (if present), and whether they relate to inherent features of these markets;*
- *the benefits or harms which are associated with concentration in digital markets; and*
- *the degree to which large market players enable or inhibit wider innovation and investment.*

We would welcome evidence on the positive or negative economic impacts of all of the above, for example on prices, quality, choice, innovation or privacy. The Expert Panel was asked to focus on the impacts on competition: please do not provide evidence relating to impacts on (for example) harmful content available online, or the impacts of digital markets on the availability of a range of news media which are beyond the scope of our review or being considered elsewhere. Please be explicit about the sources of evidence for your view, where possible.

Response:

Social media and mobile usage help firms build online experiences where consumers can easily use e-commerce. Google is one of the big firms dominating the digital market. To secure e-commerce growth companies strive to get their e-commerce websites to the top of search engine pages. Although Google has reported the factors that organise every single Web page including e-commerce sites, it is still a mystery how Google ranks each page on the search engine using 200 unidentified ranking criteria. It would provide a fairer competitive environment if there was clear regulation for the Google ranking system, helping digital firms of all sizes to understand the process.

World leading e-commerce site Amazon has successfully integrated communication into e-commerce. Amazon is one of the biggest world leading companies in the digital market, with a focus on low price and fast delivery. Over the years, it has increased the number and types of facilities and employed robotic innovations and artificial intelligence in order to provide a high quality of services. Amazon also expanded into digital spaces, acquiring online search technologies (e.g. Google). Hence, Amazon has offered several benefits including price saving options and shipping benefits.

Several digital firms such as Apple, make a large of digital music, albums, individual songs available to their consumers on its own music platforms iTunes and Apple music. The companies also introduce their own digital devices which are able to users to play music, movies[i]. Apple also introduced iMac, iPhone and TV which several digital music and movies are seeded in, to make formula of keeping its hardware in its own system[ii]. The successful and dominant large firms are able to reinforce their own market shared by developing hardwear specific to their own brands and systems. It perpetuates buying and forces brand loyalty through developing a long-term relationship between firms and consumers. However, it may not represent a 'real' relationship as the consumer may not make a conscious decision. This becomes a disadvantage for consumers as they lose control over using Apple's software and hardware system.
The Google and Facebook duopoly is estimated to have a combined share of more than 50% of the market [iii]. Pivotal research group believes that these two companies account for all digital advertising in the market. In the long-term, it might leave brands with limited choices in order to advertise their brands, product and services.

However, Pivotal suggest a benefit is that it might lead to building ‘long-term relationships' between brands and digital firms. Whilst it becomes a threat to other digital firms, it helps brands to maintain a good relationship with these big digital firms. There is also a discussion around having ‘third force’ to disrupt this duopoly with several digital firms' existences including Twitter, Snapchat and Amazon. This combined market can help brands to have the flexibility to have a negotiation in order to place their advertising in online platforms.

Brands keep following the moves by other digital media players to merge their scale in an effort to better compete with Google and Facebook. The competition in the digital market benefits consumers the most, as big digital firms provide free digital services and customise cross-selling products to help consumers welfare and retention. In order to help small start-ups, big digital firms offer cloud services and open-source software, funding and additional funding services to these small firms. To provide anti-competitive digital markets, policymakers can introduce additional funding services for small firms to tackle this issue.

Hence, some resources argue that disruption occurs in a digital environment more than before, which strengthens the competition for big digital firms as well as small firms. When you compare large digital firms and small firms, larger firms are advantaged because they tend to have more intangible capital, covering creative ideas, brands, software, and innovation. Haskel and Westlake [iv]argue that firms which have great intangible capital are likely to have higher acquisition.

Looking ahead, policymakers will be concerned to ensure that not only large digital firms dominate the market. To equalise intangible capital among small and big firms there is a need for enhanced intellectual property legislation, new measurement standards, and data protection policies.

5. To what extent is it relevant for any identified benefits and harms that consumers receive 'free' services, paid for through their data? How does this affect competition in associated markets, such as the market for online advertising?

Response:

RELEVANCE (BENEFITS AND HARMS) OF CONSUMERS RECEIVING FREE SERVICES FINANCED BY THEIR DATA

Out of control and uninformed

As internet technologies develop, consumption behaviours alter, changing the way that copyright protected material is used and valued. Online technology has enabled users to share and connect with millions of other people online as well as organizations. The internet and digital firms allow unlimited dissemination, which together with the encouragement of social networks, means sharing, and sharing personal data, has become an accepted and fundamental part of modern culture[v]. Facebook reports their 1 billion (bn) active users share 30 bn pieces of content every month[1], including their personal information. It has become impossible to control the spread of information on the internet; as soon as content is online, it is accessible and sharable[vi]. This is a risk (potential harm) for the consumer as many don't understand the permanence and enduring nature of their digital footprint. This includes the loss of ownership of personal images and material shared which the social media company may sell on for profit. Losing control of their personal data is a harm oft caused by the uninformed consent provided by the consumer. When consumers make their personal information accessible online the information exchange process is not explained and genuine informed consent is rare. The research my colleague and I conducted shows that the Terms and Conditions (T&Cs) explaining the legal implications of data sharing are rarely read by online users – many users find them too long or do not understand the legal or technical language. The current system does not provide informed consent despite companies' efforts to do the right thing. If there was an industry standard for data sharing terms and conditions which uses plain English and an expectation that all companies use a number of consistent set risk-rated standards to set out the implications of the enduring nature of the digital footprint and how much is passed on this would provide consumers with sufficient familiarity to make better-informed choices.

Our research [vi] revealed the ten fundamental policies individuals and brands need to understand better. There are key terms that are unclear to consumers and brands. This includes *the licence granted is defined as "a non-exclusive, royalty-free, transferable, sub-licensable, worldwide license to host, use, distribute, modify, run, copy, publicly perform or display, translate, and create derivative works of".* This research highlights that social networking sites should introduce an enhanced copyright policy including amending its user agreement so that it is clearer, alongside introducing visual digital tools that explain their terms and conditions. Companies are currently benefiting from the uninformed consent provided by consumers and, therefore, may be less willing to educate consumers if an informed understanding stems the in-flow of personal data. There is a role for Government and regulators to ensure the balance between consumer and company benefit is a fair one and represents informed consent. Making the terms and conditions understandable and accessible through different formats is a start. An independent campaign educating the public about the ramifications of the long-term digital footprint, the comprehensive picture their personal data supplied companies with, and the prolific level at which data may be sold on would be a very positive step as the country begins to understand GDPR more.

Data sharing – personal gain or a necessary evil?

Benefit: Informed choice to personally gain - Research[vii] shows that individuals are happy to sign up for specific social media apps, emails and messaging platforms if they receive a high value in using these different platforms (Experian, 2017). This is a perceived benefit - a win-win – the individual gets something for 'free' – and the company obtains valuable consumer information to market and develop their products and services. Consumers understand and recognise, often value, this trade for their data. They tend towards sharing their personal information if the value-based exchange is clear and made transparent by the organisation.

- 46% of consumers are happy to share their data with brands they already use and trust;
- 69% of consumers also accept the responsibilities of sharing data with brands when they receive some discount and free product from brands [i2].

However, consumers are cautious, suspicious even, when sharing their personal data for online financial services because they are uncertain how their data will be used and shared[viii] and consumers are aware of and fearful of financial scams.

Harm: Lack of choice - Consumers approach data sharing from four varied mindsets which highlight how ill-informed 63-91% of British consumers are about selling[viii] :

- "The Unaware" - 22% of consumers are unaware of how companies use their personal data when they accept the terms of conditions
- "The Acceptor" - 41% of consumers share their data only because they think it is inevitable not to share it (an unavoidable necessary evil)
- "The Cautious" - 28% of consumers consciously approach the data exchange process
- "The Incognito" - only 9% of consumers understand how to share data without revealing the personal information that they do not wish to share with companies and organizations.

As up to 91% of the population do not sufficiently understand the data exchange processes, policymakers need to be meticulous when making privacy and data protection policy choices because individuals are not fully cognisant of the digitalised world and may unwittingly engage in risky behaviours through oversharing, particularly when lured by a free service.

IMPACT ON COMPETITION IN MARKETS – Personal data essential to be competitive

Data sharing has been a revolution for online advertisers - it enhances their efficiencies and achieves people-based targeting – with an impact on competition. Companies use big digital firms (e.g. Google, Facebook) to collect consumers personal data so they can personalise their marketing strategies, reach their consumers and convert them into actual customers. It provides a huge advantage against non-digital competitors, meaning they spend the majority of their advertising budget online. By 2020 £3.8bn will be spent on Facebook online advertising alone. These large companies become powerful, acting as gate-keepers, and an obligatory partner for advertisers to target their audience in both the digital and traditional markets. The companies provide limitless data about the consumers who are reliant on their integrity during their transferred ownership of the individual's data. These companies, mainly social media websites and search engines, create and publish content that attracts and lures users to engage with them. In essence, the content and use is a free service paid for through the consumer's data. The companies collect personal data and sell it on to third-party advertisers[ix]. Such is the value of the personalisation agenda these giant digital platforms have become indispensable for both consumers and advertisers – leaving companies with limited alternative effective advertising strategies. Consumers sell their data for an app or service at such a rate it has narrowed marketing strategies and companies are reliant on personal data to compete effectively.

6. How do technologies such as artificial intelligence (AI) and machine learning affect competition and what are their implications for competition policy? Does algorithmic pricing raise new concerns about competition?

We are interested in any evidence on the implications of AI, machine learning and algorithms for competition. In particular, we would welcome any evidence on whether prices set algorithmically but without explicit collusion can interact or converge in ways that would disadvantage consumers.

Response:

Brands use AI technologies by dealing with two different types of data: structured data and unstructured data. Whilst, unstructured data is referred daily user-generated data including speech, text, image, structured data refers to standardised datasets including consumers demographics and web-browsing history[3]. Recently, big search engine companies have been using the data generated by online advertisements in order to identify consumers' buying patterns. Through using Adwords on search engines sites, firms are now able to understand how well their engagement was received by consumers. Advertisers use AI for understanding consumers buying journey including their needs and wants. Kietzman [3] discussed key building blocks allow advertisers to gather an understanding of consumers. Their research shows that key building blocks are natural language processing, image recognition, speech recognition, problem solving and reasoning, machine learning. Through using AI technologies advertisers can impact each stage of a consumers journey: need/want recognition, initial consideration, active evaluation, purchase decision and post-purchase decision. Specifically, in the stage of a purchase decision, advertisers and brands can determine real-time price adjustment on the basis of consumers demand and competitors' activities. However, if businesses have a price adjustment policy, consumers tend to buy any products at full-price.

Companies also employ AI technology to programme their programmatic consumption which is the automation of brand choices. This programme is fully automated which the purchase decision is made by computers rather than consumers. Pricing algorithms can also help business to personalise their sales promotions and marketing strategy. It provides huge advantages to giant digital firms as they are able to discriminate pricing by using AI technologies. This intelligent algorithmic pricing tends to sustain competition in the digital market. Large digital firms dominate the market by using algorithmic pricing. Policy makers need to design new tools, regulations in order to address the problem of algorithmic pricing driven economy.

AI technology is a great opportunity for both modest and big digital companies to establish their pricing, product development and advertising strategies. The rising market power of large firms with new AI technology reinforces the advantage of big firms in the digital market whilst resulting in an anti-competitive environment for small firms. However, this algorithm provides an easy way of collecting data without human interaction, there is a lack of clarity around implication and agreement of using these machine learning technologies. Although this provides an advantage to consumers and large firms, policymakers need to produce effective legal implications to monitor and control the usage of these algorithms for both pricing and personal data collection. Recently, the European Commission[x] (2009) proposed equally-efficient competitor benchmark testing. The test inspects whether a competitor with a similar cost structure would be able to compete with the dominant firm when it applies the same end-user price. This approach would provide balance within the sector if adopted by policymakers to identify the issues surrounding unequal competition within the digital market. Agreement and clarification of the legal implications of how these advanced AI technologies can be used by digital firms would provide a measure of equality.

[i] Guardian, 2017. "Which is the best music streaming service?". Access : https://www.theguardian.com/technology/2016/feb/16/which-is-the-best-music-streaming-service-spotify-apple-music)

[ii] OECD, 2015. "Digital Economy Outlook". Access: http://www.oecd.org/internet/oecd-digital-economy-outlook-2015-9789264232440-en.htm)

[iii] Emarketer, 2018. “Data Suggests Surprising Shift: Duopoly Not All-Powerful”. (access https://www.forbes.com/sites/johnkoetsier/2018/03/19/digital-duopoly-declining-facebooks-googles-share-of-digital-ad-dollars-dropping/#5821217460a8)
[iv] Haskel and Westlake (2018). Access: https://press.princeton.edu/titles/11086.html)
[v] Levine, R. 2012. *Free Ride; How the Internet is Destroying the Culture Business and How it Can Fight Back.* London: Vintage.
[vi] Bosher, H. and Yesiloglu, S., 2018 “An analysis of the fundamental tensions between copyright and social media: The legal implications of sharing images on Instagram”. (Access : https://www.tandfonline.com/doi/abs/10.1080/13600869.2018.1475897)

[viii] Experian research, 2017. “Delivering Value in the digital age”. (access : https://finance-edge.com/wp/wp-content/uploads/2018/10/delivering_value_in_the_digital_age.pdf)
[ix] ECON Committee, 2015. “Challenges for competition policy in a digitalised economy”. (access. http://www.europarl.europa.eu/RegData/etudes/STUD/2015/542235/IPOL_STU(2015)542235_EN.pdf)
[x] European Commission, 2009. (access: http://ec.europa.eu/competition/publications/annual_report/2009/en.pdf)

SUBMISSION TO DIGITAL COMPETITON EXPERT PANEL

Dr. Nicolo Zingales*

Qs 1, 2, 3

The impact of digitization on our society has been exponentially increasing over the last two decades. The most profound transformation has arguably come from the so-called "datafication", which refers both to the increase of availability of data and the parallel advances in data analytics[1]. Although those advances derive from the improvement and proliferation of digital technologies and network connectivity, which in turn increase the opportunities and reduce the costs for data collection, storage and processing[2], they also play a distinct and indeed crucial role in driving innovation in productivity, growth and well-being[3]. The increased availability of data is a key component in that regard, as it dramatically improves the ability of a variety of market players to provide more targeted services. There are also powerful synergies in the interaction between those two features of the data-driven economy, as profiling and other probabilistic techniques used for data analytics enable the targeting of highly specific categories of consumers even in the absence of data making an individual identified or identifiable. In addition to providing fertile ground for 'classic' competition discussions about exclusion, this has fueled concerns of exploitative conduct. These are briefly introduced below.

Undoubtedly, big data and increasingly sophisticated personalization constitute an important advancement for society, offering great potential to consumers and their ability to fulfill their needs in the market -including needs they had not realized or anticipated. However, as is often the case with technological advancement, new capabilities can be captured by certain market players or categories of society and used in ways that provide benefits only or primarily to few, while producing harms or inconveniences to many[4]. In fact, those benefits most clearly materialize for the limited number of entities that are able to amass vast troves of valuable data, typically of varied nature and collected at fast and constant pace (thus attending to all the four characteristic "Vs" of big data[5]), all of which tends to favor the existence of a handful of big multi-market undertakings[6] and a power asymmetry *vis a vis* those who lack access to such resources[7]. It is therefore important to ensure that an adequate legal framework is in place to

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[1] See Jens-Erik Mai (2016) 'Big data privacy: The datafication of personal information', The Information Society, 32:3, 192-199.

[2] OECD (2013), "Exploring Data-Driven Innovation as a New Source of Growth: Mapping the Policy Issues Raised by "Big Data"", OECD Digital Economy Papers, No. 222, OECD Publishing, Paris, https://doi.org/10.1787/5k47zw3fcp43-en, 8.

[3] OECD (2015), Data-Driven Innovation: Big Data for Growth and Well-Being, OECD Publishing, Paris. http://dx.doi.org/10.1787/9789264229358-en.

[4] See Klaus Schwab, *Shaping the fourth industrial revolution* (Knopf Doubleday Publishing Group, New York City 2018).

[5] In its recent decision in Apple/Shazam, the European Commission gave legal relevance to these four dimensions to assess the existence of a "data advantage": see Case N. COMP/M.8788–*Apple/Shazam*, Commission decision of 6/9/2018, available at http://ec.europa.eu/competition/mergers/cases/decisions/m8788_1279_3.pdf, paras. 318-327.

[6] For an account of the level of multi-market competition, see Nicolas Petit, 'Technology Giants, the Moligopoly Hypothesis and Holistic Competition: A Primer' (October 20, 2016). Available at SSRN: https://ssrn.com/abstract=2856502 or http://dx.doi.org/10.2139/ssrn.2856502

[7] See, generally, Allen Grunes and Maurice Stucke, 'No Mistake About It: The Important Role of Antitrust in the Era of Big Data', Antitrust Source (Apr. 2015); *Big Data and Competition Policy* (Oxford University Press 2016).

address concerns related to distributional fairness and systemic harms caused by these transformations, which are typically not well captured under antitrust analysis[8].

Data-driven advertising based on increasingly intrusive and sophisticated methods of data collection[9] provides a perfect illustration of this double-edged role of technology, at the same time empowering and compromising individual autonomy. Although such advertising allows the emergence of multiple types of businesses, enabling the provision of seemingly "free" services, it is important to appreciate that it comes at a price for consumers going beyond the reception of targeted ads, and entails a loss of agency in their online transactions. First, ad-based funding skews the content towards advertisers (as recognized early on by the very founders of Google)[10], therefore tending to give more prominence to commercial content and the fulfillment of majoritarian preferences[11]. Secondly, the data captured significantly affects the market interactions between consumers and producers, allowing the latter to use that information to consistently and almost perfectly discriminate amongst the former both on price and on the types of goods and services they are offered[12]. To compound that, the constant flow of data on consumer preferences and demand fluctuations incentivizes producers to continuously adjust their prices over time, a phenomenon called "dynamic pricing", which hinders consumers' ability to detect price discrimination.

The loss of agency for consumers is particularly pronounced in an era where personalization gains prominence in defining the characteristics of online content. As we move away from traditional retail, with consumers progressively making their purchases online[13], prices are increasingly adjusted as a reflection not only of costs, stock levels and strength of competition, but also of consumers' willingness to pay[14]. Although there has been no comprehensive measurement so far on the pervasiveness of price discrimination, anecdotal evidence suggests that it is a growing possibility in online transactions. For example, a recent study observed a high degree of customization and "steering" (i.e., directing offers to certain consumers and not others) in connection with some user characteristics, such as operating system and type of browser[15]. In the specific context of online hotel reservations, it was reported that Mac users received higher quotations than PC users.[16] Similarly, a study where researchers created fake online accounts to survey pricing of 600 different products from 200 vendors found that products up to 4 times more expensive were shown to affluent personas rather than the budget

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[8] For a powerful critique and an agenda for more progressive antitrust, see Ioannis Lianos, Polycentric Competition Law, (2018) *Current Legal Problems*.

[9] For instance, reference is made to browser fingerprinting, face recognition and emotion detection.

[10] "[W]e expect that advertising funded search engines will be inherently biased towards the advertisers and away from the needs of the consumers". Larry Page and Sergey Brin, 'Anatomy of a Large-Scale Hypertextual Web Search Engine' (1998) Journal Computer Networks and ISDN Systems 30(1-7), 107-117.

[11] Katherine J Strandburg, 'Free Fall: The Online Market's Consumer Preference Disconnect' (2013) University of Chicago Legal Forum 95.

[12] Ariel Ezrachi and Maurice Stucke, *Virtual Competition: The Promise and Perils of the Algorithm-Driven Economy* (Harvard University Press, Cambridge 2016), 101-130.

[13] Eurostat, *E-commerce statistics for individuals*. Available at http://ec.europa.eu/eurostat/statistics-explained/index.php/E-commerce_statistics_for_individuals (showing that by December 2016 about 2/3 of Internet users in EU shop online).

[14] Office of Fair Treading, *Personalised Pricing: Increasing Transparency to Improve Trust* (May 2013) at http://webarchive.nationalarchives.gov.uk/20140402142426/http:/www.oft.gov.uk/shared_oft/markets-work/personalised-pricing/oft1489.pdf, 9.

[15] Aniko Hannak, Gary Soeller, David Lazer, Alan Mislove, Christo Wilson, 'Measuring Price Discrimination and Steering on E-commerce Web Sites', Proceedings of the International Conference on Internet Measurement. ACM, 305-18.

[16] Dana Mattioli, 'On Orbitz, Mac Users Steered to Pricier Hotels' (WSJ, 23 August 2012), <https://www.wsj.com/articles/SB10001424052702304458604577488822667325882> accessed 10 July 2018.

conscious personas[17]. Finally, and perhaps most strikingly, consider the price discrimination strategy at Uber, which is well known for practicing so called "surge pricing", i.e. to raise ride fares at times of high demand. During an interview with NPR, Uber's head of economic research Keith Chen revealed what he called an "interesting psychological fact of human behavior" in relation to their users' reaction to surge pricing: data indicates that they are more likely to accept them when the phone's battery is low[18]. While he made a point in ensuring that Uber "absolutely do[es]n't use that to […] push you a higher surge price", that position was rebutted just few weeks later when Uber announced a new pricing policy explicitly based on users' predicted willingness to pay.[19]

Is this a problem that should be tackled by antitrust enforcement? One could argue that price discrimination is a natural feature of markets, often present in the offline world (examples are insurance premiums, or the segmentation of prices for event tickets) and that should not be of particular concern in the online ecosystem- at least to the extent it does not constitute a means to exclude or create a competitive disadvantage between equally situated competitors[20]. However, this liberal view risks overlooking the significance of the changes brought by modern technology, which has substantially improved the effectiveness of discrimination by reason of the scope and the sheer amount of data collected and usable for these purposes, offering producers systematic opportunities to extract rents in their transactions with consumers[21]. Businesses rely on cookies and other sophisticated techniques to track user behavior, gathering firsthand knowledge and passing on such knowledge (or part of it) to third parties[22]. The rise of advertising networks has been pivotal in this regard, enabling the sharing of users' location, browser and operating system, the websites from which they landed on a provider's page, the time spent on each page, and specific purchases they made[23]. As a result, a variety of players in the online ecosystem are able to make substantially more accurate individualized predictions about the behavior of consumers, and adjust their offers accordingly.

To get a sense of the significance of this paradigmatic shift, consider the recent study by Benjamin Shiller demonstrating that while Netflix could have increased its profits by 0.8 percent by using basic demographic factors (such as age, income, ethnicity and population density by zip code) to charge tailored prices, the multiplier would be as much as 12.2 percent if the information collected included browsing history.[24] The magnitude of this differential,

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[17] Jakub Mikians, László Gyarmati, Vijay Erramilli, Nikolaos Laoutaris, 'Detecting price and search discrimination on the Internet', Proceedings of the 11th ACM Workshop on Hot Topics in Networks, 79-84.

[18] Ryan Grenoble, 'Uber Knows When Your iPhone Battery Is Dying And You're Getting Desperate', (Huffington Post, 20 May 2016) at https://www huffingtonpost.com/entry/uber-surge-pricing-battery-life_us_573f2057e4b0613b512a0130.

[19] Eric Newcomer, "Uber starts charging what it thinks you are willing to pay", (Bloomberg, 19 May 2017) at https://www.bloomberg.com/news/articles/2017-05-19/uber-s-future-may-rely-on-predicting-how-much-you-re-willing-to-pay> accessed 10 July 2018; Scott Duke Kominers, 'Uber's new pricing idea is good theory, risky business' (Bloomberg, 13 June 2017), https://www.bloomberg.com/view/articles/2017-06-13/uber-s-new-pricing-idea-is-good-theory-risky-business.

[20] Damien Geradin and Nicolas Petit, 'Price Discrimination Under EC Competition Law: Another Antitrust Theory in Search of Limiting Principles' (2006) 2 (3) Journal of Competition Law & Economics 479–531

[21] Ezrachi and Stucke, supra n. 12; see also Ariel Ezrachi and Maurice Stucke, 'The Rise of Behavioral Discimination' (2016) 37 European Competition Law Review 485-492.

[22] Meaning websites others than the one the user is currently visiting. For an illustration of third party trackers, see M JR, Mitchell JC 'Third-party web tracking: Policy and technology', (2012) IEEE Symposium on Security and Privacy, 413–427.

[23] Generally, Frederik J. Zuiderveen Borgesius, *Improving privacy protection in the area of behavioural targeting* (Wouters Kluwer, 2015); See also Michael Kosinski, 'The End of Privacy', available at: https://www.gsb.stanford.edu/insights/michal-kosinski-end-privacy.

[24] Benjamin Shiller, 'First-Degree Price Discrimination Using Big Data', available at http://EconPapers.repec.org/RePEc:brd:wpaper:58.

which is derived from the way in which Netflix is able to approximate consumers' reservation price in charging subscription rates for DVDs in the pre-streaming era, can be attributed to a significant degree (0.18% in the case of discrimination based on demographic information, 7.75% in the case of discrimination based on browsing data) to a welfare transfer from consumers to producers. Shiller also demonstrated in joint research with Joel Waldfogel that personalized pricing on iTunes could raise Apple's revenues for an amount ranging from 55 to 66%, with a corresponding 25% to 33% consumer welfare loss[25].

These examples raise a fundamental policy question: shouldn't the benefits generated by the proliferation of consumer data accrue also (or even primarily) to those who reveal them? The extent to which these questions belong in antitrust policy is far from obvious even in a jurisdiction like the European Union, which explicitly seeks to preserve choice and prevent unfair exploitation. EU competition law extends scrutiny to exploitative conduct, i.e. one that directly harms consumers, but its enforcement in that regard has been extremely limited. In the Guidance Paper laying out its priorities on unilateral conduct, the European Commission left open the possibility to intervene in such cases, and connected it to situations "where the protection of consumers and the proper functioning of the internal market cannot otherwise be adequately ensured"[26]. This can be seen a reference to market failures that cannot be appropriately addressed by other regimes[27], which reveals a preference for tackling the causes rather than the symptoms of exploitation[28].

Irrespective of whether competition authorities ought to pursue exploitative discrimination, they face an undeniable challenge of identification: how can these practices be detected, in the absence of effective mechanisms for consumer awareness? And how do general concepts such as "unfairness" and relevant markets apply, when producers calibrate their offers in relation to myriads of diverse and highly granular consumer profiles? Finally, even admitting that distributional concerns are within the remit of antitrust, addressing wealth transfers can be problematic in situations where property rights are not clearly defined, as is the case for the entitlements to use consumer data in order to provide personalized offers. Indeed, the possibility of collecting and using consumer data for competitive purposes may be precisely what brought investment and innovation, and thus intervening to condemn such conduct might deter the emergence of new entrants.

Another possible exploitative harm relates to unfair terms leading to excessive data collection, following a theory that seems to have attracted interest in competition law lately[29]. According to that theory, exploitative abuse cases could be brought whenever a service provider required

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[25] Benjamin Shiller and Joel Waldfogel, 'Music for a Song: An Empirical Look at Uniform Pricing and its Alternatives' (2011) 59 (4) Journal of Industrial Economics, 630-660.

[26] Guidance on the Commission's enforcement priorities in applying Article 82 of the EC Treaty to abusive exclusionary conduct by dominant undertakings, OJ C 45, 24.2.2009, para. 7

[27] Inge Graef, 'Algorithms and Fairness: What Role for Competition Law in Targeting Price Discrimination Towards End Consumers?' (December 19, 2017). Available at SSRN: https://ssrn.com/abstract=3090360 or http://dx.doi.org/10.2139/ssrn.3090360.

[28] Frederic Jenny, 'Abuse of Dominance by Firms Charging Excessive or Unfair Prices: An Assessment' (September 11, 2016). Available at SSRN: <https://ssrn.com/abstract=2880382> or http://dx.doi.org/10.2139/ssrn.2880382.

[29] See in the sense of "right" and "fair" prices in relation to disclosed personal data: Competition Commissioner Vestager, Data Ethics event on Data as Power, Copenhagen, 9 September 2016, at https://ec.europa.eu/commission/2014-2019/vestager/announcements/making-data-work-us_en; see also Bundeskartellamt, 'Bundeskartellamt initiates proceeding against Facebook on suspicion of having abused its market power by infringing data protection rules', Press Release 02.3.2016, http://www.bundeskartellamt.de/SharedDocs/Meldung/EN/Pressemitteilungen/2016/02_03_2016_Facebook.html?nn =3591286.

vastly more personal data than is reasonable for the provision of that service[30]. Unfortunately, calculating what may constitute an excessive price in this scenario is far from straightforward[31]. This is due to the existence of significant externalities to the barter exchange of data and services: in addition to the various motives that may induce a provider to offer its good or service for a zero price, a more fundamental problem concerns the nature of data. Since it is a non-rival good, it can be expected that the market clearing price for its acquisition may not fully coincide with the economic value of the underlying personal record: this is because the same data can both be used by the business in question for multiple purposes, and transferred or sold to third parties[32].

Despite these difficulties, one may argue that it still possible to take the price developed in market purchases as *benchmark*, upon which to conduct the two-pronged test for excessive pricing developed in *United Brands*[33]: determining (1) whether the difference between the costs actually incurred and the price actually charged is excessive, and (2) whether a price has been imposed which is either unfair in itself or when compared to competing products. Benchmarking is an exercise typically conducted by competition authorities to show both the excessiveness and the unfairness of a price, specifically that the price difference is both significant and persistent[34]. Once that is determined to be the case, the burden shifts onto the undertaking in question to prove that the lamented differential pricing was justified[35].

However, for a benchmark to be valid it would need to reflect a competitive market for a comparable product[36]. Failing that, there would be a significant risk of running into the data equivalent of the "cellophane fallacy", whereby a monopolistic price (in this case, a low reward for disclosed data) is used as a basis to gauge the existence of market power, failing to recognize that the firm charging that price faces less substitution if the SSNIP test departs from the competitive price.[37] At a minimum, authorities would need to assess the state of competition for consumer eyeballs in a range of actual and potential markets, depending on the types of data concerned, and accept the use of a benchmark only where there is a sufficient number of firms constraining each other's market power. Since an individual can sell/transfer the same information to different competitors, this condition is unlikely to be present, except in exceptional situations including: when a consumer has strong privacy preferences (such that

[30] For example, the widely deployed weather forecast application "AccuWeather" was recently found to obtain location data when its users had switched off location tracking. See Zack Whittaker, 'AccuWeather caught sending user location data, even when location sharing is off', ZDnet (22 August 2017) https://www.zdnet.com/article/accuweather-caught-sending-geo-location-data-even-when-denied-access/.

[31] Konstantina Bania, 'The Role of Consumer Data in Competition Enforcement' (2018) 14 European Competition Journal, 38-80.

[32] OECD (2013), 'Exploring the Economics of Personal Data: A Survey of Methodologies for Measuring Monetary Value', OECD Digital Economy Papers, No. 220, OECD Publishing, Paris. http://dx.doi.org/10.1787/5k486qtxldmq-en.

[33] Case 27/76, *United Brands Company and United Brands Continentaal BV v Commission of the European Communities* [1978] ECR 207, para. 252.

[34] Case C-177/16, *Autortiesību un komunicēšanās konsultāciju aģentūra v. Latvijas Autoru apvienība v Konkurences padome* (2017) ECLI:EU:C:2017:689, para. 55. It is worth noting that Advocate General Wahl opined that this would in principle only occur in regulated markets and where there is no countervailing buyer power. See Opinion of AG Wahl in Case C-177/16, *Id.*, paras. 48-50.

[35] See, generally, Alessandro Turina and Nicolo Zingales, 'Economic Analysis and Evaluation of "Fair Prices": Can Antitrust and International Taxation Learn from Each Other?' (2009). Comparative Research in Law & Political Economy. Research Paper No. 51/2009; Pinar Akman and Luke Garrod, 'When Are Excessive Prices Unfair?' (2011) 7(2) Journal of Competition Law and Economics, 403-426

[36] Liyang Hou, 'Excessive Prices within EU Competition law' (2011) European Competition Journal 47-70, 63.

[37] See Donald F. Turner, 'Antitrust Policy and the Cellophane Case' (195670 (2) Harvard Law Review 281-318.

he minimizes the number of entities to which he is willing to disclose his personal information) or limited time available (such that he can engage only in a limited number of interactions).

A second complication is that benchmarking requires a careful case-by-case analysis on the dynamics (not only the competitiveness) of the market in question and may accordingly result in distinctions ruling out comparability, for instance between a market where there is a repeated transaction and a financial return in exchange for data and one where there is no visible transaction and the return depends on preferences set by the individual in question, including the value attached to privacy in a range of different circumstances. Concretely, while the use of the price-tag benchmark could be considered in combination with any price component and running a modified SSNIP test to assess individuals' willingness to pay for reduced data disclosure (which may be called "privacy" for simplification)[38], this method runs into related the problem of measurement of heterogeneous consumer preferences and sensitivity. The question of privacy preferences is itself quite complex, as recent studies have demonstrated that revealed preferences are idiosyncratic, subjective, context-dependent, subject to change over time[39], inextricably related to risk aversion[40] and widely different from stated preferences.[41] More research in this area is needed to develop tools that can assist with the economic assessment by courts and regulators, for example by designing model surveys, conceptualizing different levels of privacy protection and identifying categories of consumers based on their privacy attitudes.

Q4

In order to appreciate the challenges brought by digitization to traditional merger analysis, one needs to distinguish between jurisdictional and substantive questions. The present inquiry seems to be less concerned about the jurisdictional aspect, i.e. whether a transaction meets the thresholds for review, and this may be in part motivated by a perceived adequacy of the current framework in the UK. In fact, unlike other jurisdictions, merger control in the UK can be based on an alternative to the turnover threshold, which is based on the "share of supply" test. The latter is satisfied when the merger creates or enhances a 25% share of supply or purchases of any goods or services in the UK or in a substantial part thereof, which leaves the authority with a significant discretion as they do not need to base the estimation on the definition of the relevant market. However, if one considers the key role of consumer data and attention in driving competition, there is a risk that even transactions which do not meet this threshold could raise anticompetitive concerns. In principle, the acquisition by a small media with unrivalled access to consumer eyeballs of an undertaking with a substantial amount of data on consumer preferences and interactions could raise anticompetitive issues and yet go under the radar, to the extent that neither the viewership nor the databases as such translate into sales or advertising. This has to do with the difficulties with the assessment of market power in zero-price markets, where the monetization of the value derived from the acquisition of informational and attentional power is one step removed- as it can be done well after the consummation of the merger. It is worth pointing out that the Enterprise Act devotes special treatment to mergers involving media, providing for the possibility for the Secretary of State

[38] For a comprehensive analysis of the use of willingness to pay for privacy as a criterion for market definition, see Magali Eben, 'How "Free" Internet Services Challenge Traditional Antitrust Tools: Personal Data as a Price' Available at SSRN: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2747367.
[39] Alessandro Acquisti, Curtis R Taylor, and Liad Wagman. 'The economics of privacy' (2016) Journal of Economic Literature, 54 (2), 442-92.
[40] Alissa Frik and Alexia Gaudeul, 'Privacy Protection, Risk Attitudes, and the Need for Control: An Experimental Study' (February 18, 2016). CEEL Working Paper 1-16. Available at SSRN: https://ssrn.com/abstract=2743639.
[41] Laura Brandimarte, Alessandro Acquisti, George Loewenstein, 'Misplaced Confidences: Privacy and the Control Paradox' (2015) Social Psychological and Personality Science 4 (3), 340 – 347.

to give notice to the Office of Fair Trading where it believes that one or more public interest considerations are relevant to the assessment of the merger. The Secretary of State would then decide following advice by the Ofcom and the Competition Market Authority. Public interest considerations include national security, the stability of the UK financial system and media plurality and accuracy; however, the Secretary of State may introduce new considerations, pursuant to article 58 (3) of the Act. Given the peculiarities of data-driven markets, it is worth thinking about the introduction of a specific consideration for the acquisition of substantial datasets involving UK consumers. This is particularly important as individual-level consumer data may well be one of the most significant assets of firms that are failing or otherwise discontinuing prior consumer-facing business in the country, and the transferring of such data to third parties in the event of an acquisition may be permitted under that undertaking's terms of service[42].

From a substantive perspective, the UK formally applies a different standard than the EU ("substantial lessening of competition", as opposed to the "substantial impediment to effective competition") but as a matter of practice the differences in the application of the test are negligible. Once again, given the dynamics of digital competition, the Competition and Market Authority is advised to exercise particular caution when dealing with markets involving free products or services, and where the value lies in consumer data and attention. The ability to monetize this value at a later stage requires competition authorities to look at markets from a long-term perspective, without necessarily focusing on existing product markets which data may be fed into. This requires a re-examination of the doctrine of potential competition to consider the instrumental value of consumer attention (bearing in mind its inextricable link to content), looking beyond existing product functionalities; and arguably an expansion of the boundaries of the so-called "innovation markets"[43] to account for the fungible nature of data[44].

The decisions by the Office of Fair Trading in *Facebook/Instagram* and by the European Commission in *Apple/Shazam* may serve as an illustration of the above-mentioned dynamics: in the former, the OFT myopically focused on the supply of camera and photo editing apps, without sufficiently considering the well-established market position of Instagram in the market for consumer attention. It thus failed to consider Instagram's potential as rising social network that competed head to head with Facebook, eventually deciding not to refer the case to the European Commission. In the latter case, the Commission arguably failed to look at an important dimension of competition between audio content recognition softwares: the intensity of advertising. It dismissed three types of concerns on grounds that Shazam had low market power, but without analyzing this key dimension of competition and its inverse relation to consumer attention: the more advertising is introduced into the service, the more likely the user is to flock to an alternative provider. In contrast, the Commission made its estimate on the basis of sales data. Although expressing discomfort with an exclusive reliance on this measure, it noted that Shazam is not a startup company and there is no history of disruptive entry or innovation. As a result, Shazam's low level of market share accurately reflected its degree of

[42] For a discussion of the privacy considerations involved in this scenario, see e.g. Paula Rosenblum, 'Bankrupt RadioShack's Attempts To Sell Customer Data Meets Resistance' *Forbes* (24 May 2015), at https://www.forbes.com/sites/paularosenblum/2015/03/24/bankrupt-radioshacks-attempts-to-sell-customer-data-meets-resistance/; Kae Kaye, 'Radio Shack Customer Data Sale Is More Common Than You Think', AdAge (26 March 2015), at https://adage.com/article/datadriven-marketing/radioshack-customer-data-sale-common/297777/

[43] For an overview of these concepts, see Marcus Glader, *Innovation Markets and Competition Analysis: EU Competition Law and US Antitrust Law* (Edward Elgar 2006); Benjamin Rene' Kern, 'Innovation Markets, Future Markets, or Potential Competition: How Should Competition Authorities Account for Innovation Competition in Merger Reviews?' (2014) 37 (2) World Competition, 173-206.

[44] See Inge Graef, 'Market Definition and Market Power in Data: The Case of Online Platforms' (2015) 38 (4) World Competition, 493.

market power (irrespective of its ability to capitalize on consumers' attention through advertising) [45].

A final point worth making is that the analysis of mergers in a data-driven environment is complicated by the fact that competition authorities must proactively take into account possible privacy and data protection implications of the merger, for two different reasons: first, they are required to do so by article 51 of the Charter of Fundamental Rights, which requires European institutions to promote the fundamental rights and principles in implementing EU law. Second, they are by statute mandated to do so to the extent that privacy and data protection constitute a dimension of competition, namely a qualitative consideration. The European Commission has taken into account privacy and data protection considerations in the *Facebook/Whatsapp* and *Microsoft/Linkedin* cases, but arguably its analysis suffers from the lack of a comprehensive and systematic framework to assess the multiple parameters (for instance, the various data protection principles) that come into play[46]. This is one of the aspects on which a cooperation between data protection and competition authorities would be most fruitful.

Q5

One of the most difficult questions in the digital economy is whether authorities could construct a market definition revolving around the acquisition of specific types of data, as separate from the market for goods or services provided in exchange. The key question is not whether the other side of the market should be taken into account (for it clearly should!) but whether one can identify a market for "individual-level" consumer data, given the high specificity and the multiple sources and uses that can be made of those data. One should start this enquiry by reminding that there is in principle no need to link an input to a price in order to define a market for that input. The idea of a market for so called "zero price" products was embraced by the European Commission in *Microsoft/Skype*[47], aligning with the suggestion advanced by commentators that antitrust markets should not simply be defined inferring the position of the parties from the related "paid" side (for example, in online advertising)[48]: this is because the returns of investment derived from the sale of a good might not be reflected in terms of price, but might lie in non-monetary values such as various types of strategic positioning of the product or brand, which can be exploited in later time[49].

Accordingly, this should lead to the application of competition law not only to seemingly "free" products, but also to seemingly "free" provision of personal data. After all, if competition law applies to undertakings carrying out an economic activity which consists of "offering goods and services on the market[50]", it is not clear why it would not extend to situations where the

[45] For a more in-depth analysis, see Nicolo Zingales, 'Apple/Shazam: Data Is Power, But No Problem Here', Competition Policy International (December 2018) at https://www.competitionpolicyinternational.com/appleshazam-data-is-power-but-not-a-problem-here/

[46] See in this respect the suggestions made by Samson Esayas, 'Competition in (data) privacy: 'zero'-price markets, market power, and the role of competition law' (2018) 3 (1) International Data Privacy Law, 181–199

[47] Case COMP/M.6281—*Microsoft/Skype*, Commission Decision (Oct. 7, 2011), ec.europa.eu/competition/mergers/cases/decisions/m6281_924_2.pdf.

[48] See Fabio Polverino, 'Hunting the Wild Geese: Competition Analysis in a World of "Free"' (2012) Concorrenza e Mercato: Antitrust, Regulation, Consumer Welfare, Intellectual Property 545; Michal S Gal and Daniel L. Rubinfield, 'The Hidden Costs of Free Goods: Implications for Antitrust Enforcement' (2016) 80 Antitrust Law Journal 3, 521-562. *Contra*, see James D. Ratliff and Daniel L. Rubinfeld, 'Is There a Market for Organic Search Engine Results and Can Their Manipulation Give Rise to Antitrust Liability?' (2014) Journal of Competition Law and Economics 517-543, 523.

[49] Gal and Rubinfield, *Ibid.*

[50] Joined cases C-180/98 to C-184/98, *Pavel Pavlov and Others v Stichting Pensioenfonds Medische Specialisten*, [2000] ECR I-06451, para. 75.

good in question is personal data, which has a recognized economic value for a number of potential buyers. Established case-law recognizes that what is central to the application of competition law is the notion of economic activity, being unimportant the way in which an undertaking (including for instance a data subject offering his or her data) is financed[51]. There appears thus to be no need to even resort to the notion of inseparability between the goods provided at zero price (such as personal data) and their subsequent use for a related economic activity, as that is only relevant (though mostly not necessary) for the purpose of extending antitrust scrutiny to the provision of genuinely free products and services[52].

Nevertheless, it must be acknowledged that the application of market definition to the trading of individual-level personal data is rife with complexity. The reluctance of competition law to embrace personal data as relevant product market stems from the fact that such data can be acquired through multiple sources, including through data brokers[53]. In other words, since data is non-rival, a data-trading individual could be seen as occupying a weak position in the bidding market, for example because of a low willingness to pay by firms participating in the biddings for his or her data, while those firms may effectively gain access to those data through other sources. On the other hand, it may be hard to establish substitability between those sources due to the different levels of granularity and identifiability of the information in question, which may be quite significant. This should caution against defining a separate market for purchased and non-purchased data (i.e. acquired, observed or obtained in exchange for a service), except where technical measures ensure that purchased data is kept in isolation from further identifying information; otherwise, the risk is to underestimate the marginal value generated by the construction of richer databases, and ultimately the use of those individual-level data to provide additional products and services.

Furthermore, the acquisition of personal data is not the only possible consideration inducing an online market player to provide a "zero price" service: letting aside the special case of philanthropic motives, charging no price can be seen as a strategy for consumer adoption, in the hope to capitalize on the established customer base in the future to promote product and services. And while there could be a link between those products or services and the personal data acquired, the degree of proximity and correlation varies. It would thus seem more pertinent to place focus on the market for consumers' attention, a concept that is able to capture a broader range of considerations, and which has been used so far only in the context of broadcasting[54]. Recent scholarship has already extended this theory to the context of online platforms[55] and provided concrete suggestions on how to modify the SSNIP test to account for the role of attention as scarce resource.[56] However, competition authorities have refrained from adopting

[51] Case C-41/90, *Klaus Höfner and Fritz Elser v Macrotron GmbH* [1991] ECR I-01979.
[52] Reference is made in particular to *FENIN*: Case T-319/99, FENIN [2003] ECR II-357, para. 37. Cf. Miguel Souza Ferro, 'De Gratis Non Curat Lex: Abuse of Dominance in Online Free Services', (2016) Competition Law Review 12 (2), 153-170.
[53] US Federal Trade Commission, 'Data brokers: A Call For Transparency and Accountability: A Report of the Federal Trade Commission' (May 2014) https://www ftc.gov/reports/data-brokers-call-transparency-accountability-report-federal-trade-commission-may-2014.
[54] See Ronald H. Coase, *British Broadcasting: A Study in Monopoly* (Longmans, Green, and Co., London 1950); Paul Seabright and Jürgen von Hagen, *The Economic Regulation of Broadcasting Markets: Evolving Technology and Challenges for Policy* (Cambridge University Press, Cambridge 2007).
[55] David S. Evans, 'Attention Rivalry Among Online Platforms' (2013) Journal of Competition Law & Economics 9 (2), 313-357. Tim Wu, 'Blind Spot: The Attention Economy and the Law' (March 26, 2017). Available at SSRN: https://ssrn.com/abstract=2941094.
[56] See Wu, *Ibid*, 31 (formulating the concept of "small but significant and non-transitory increase in the advertising load") and John Newman, 'Antitrust in Zero Price Markets: Applications' (2016) 94 Washington University Law Review 49-111, 66 (proposing a "SSNIC" test based on a "small, significant and non-transitory increase in exchanged costs, which include both attention costs as well as informational costs such as data disclosure without a corresponding increase in the quality of the product or service exchanged).

this approach outside the broadcasting industry, remaining narrowly focused on actual or potential, *yet identifiable*, products[57]. One way to overcome that is to recognize that, in an era of big data and informational overload, both personal data and attention constitute resources which substantially influence the product offering, warranting a more central role in market definition[58].

Qs 6, 7, 9

One of the most daunting challenges in the assessment of antitrust conduct in the context of artificial intelligence is the extent to which enterprise liability ought to be imposed for measures undertaken by an algorithm, particularly where those measures were not foreseen or foreseeable by the person who made the decision to give effect to that algorithm. *Google Shopping* is a good test case to examine the adequacy of antitrust analysis in this context, giving a preview of some of the problems that we are likely to encounter with the increasing automation of a range of human activities. Unfortunately, the European Commission's decision that Google violated article 102 by engaging in self-favoring fails to identify the countours of abuse with regard to algorithmic design choices, insofar as it does not give sufficient indications of the exact conduct that falls short of the standards of special responsibility ascribed to a dominant company. This also generates problems of adequacy of the remedy imposed, as the Commission unqualifiedly ordered Google to take adequate measures to bring the conduct to an end, and refrain from repeating it, or engaging in any act or conduct with the same or an equivalent object or effect[59].

In order to appreciate the significance of the problem, it is necessary to make a clarification about the technology under discussion: to provide users with the most relevant results, search engines undertake editorial functions in indexing, triggering, ranking and displaying content. Those choices are made primarily by designing algorithms, i.e. rules that will govern the operation of Google's crawling, triggering, ranking and displaying technologies to perform the desired process. Because of these editorial functions, algorithms can have in-built biases which lead to systematically favouring certain content, although that may not necessarily be the result of a deliberate choice of the designer. Since the stage of algorithmic design is removed from the generation of results, it is often difficult for the designer to anticipate all the possible consequences. This holds even more true when it comes to unsupervised learning algorithms, recently incorporated into Google Search[60], that are characterized by the property to automatically learn and improve from experience without being explicitly programmed.

Of course, the underlying criticism is ostensibly that Google *should* have appreciated the consequences of its choices, including the impact of those on competition in the market for comparison shopping services. In fact, while in some instances the preferential treatment

[57] See Inge Graef, *EU Competition Law, Data Protection and Online Platforms: Data as Essential Facility* (Wouters Kluwer, Alphen aan den Rijn 2016), 107.
[58] As Wismer and Rasek point out in their submission for the OECD Report on multisided platforms, the relevant question is whether the presence of users can be monetized. S Wismer & A Rasek, 'Market Definition in multi-sided markets' in OECD, *Rethinking antitrust tools for multisided platforms* (2018), Rethinking Antitrust Tools for Multi-Sided Platforms, www.oecd.org/competition/rethinking-antitrust-tools-for-multi-sided-platforms htm, 59-60.
[59] European Commission, Case AT.39740, *Google Shopping*. Brussels, 27.6.2017, C(2017) 4444 final. Available at http://ec.europa.eu/competition/antitrust/cases/dec_docs/39740/39740_14996_3.pdf (hereinafter, "Decision"), Art. 2-4.
[60] Cade Metz, 'AI Is Transforming Google Search. The Rest of the Web Is Next', Wired (2 April 2016). Available at https://www.wired.com/2016/02/ai-is-changing-the-technology-behind-google-searches/.

ostensibly arises from the choice of criteria triggering a given algorithmic result[61], in other parts of the Decision the Commission merely takes issue with the outright exclusion of Google Shopping from the application of certain criteria that adversely affect the position of competing price comparison services (notably the […] and Panda algorithms)[62]. However, the Decision does not offer any comfort for operators of algorithmic technologies by pointing what particular conduct Google has fallen short of, i.e. what duty of care has been breached.

Although one may contend that the Decision must be premised on the recognition of intention or negligence, as required by law, this premise is nowhere to be seen in the assessment of Google's liability for algorithmic results. The Commission only refers to *subjective* intent by the concerned undertaking "to favour its own services over those of competitors in order to leverage its position in general search into the market for shopping comparison services"[63], which it uses to satisfy the requirement of objective intent for such conduct to eliminate competitors.

I have analyzed this Decision at length[64], and refer you to the annexes for further details. However, I think it is important to report here the main takeaways of that analysis:

- first, the advances in algorithmic technologies, big data and predictive analytics could better inform the processes of abstraction and inferences which decision-makers use to rely upon for the definition of intent. For instance, given that the processes of prediction for dominant companies might be significantly more advanced and sophisticated than those of other market participants and competition authorities[65], greater importance should be placed for *subjective* standards of liability. This could be based on in-camera disclosure of the dominant firms' datasets and replicability of their algorithmic design processes, to test whether the effects produced by a given choice could have reasonably been predicted considering the firm's inputs and design processes. A the same time, it is important to link those subjective standards to an objective component (a likelihood of anticompetitive effects generated by the purported conduct) which prevents an undue expansion of the concept of abuse.
- secondly, it is crucial to clarify what sort of methods of proof and inference would be deemed "subjective", and therefore considered only as additional and supporting evidence that cannot be sufficient for the establishment of an abuse: tracing the impact of an algorithm to the intent of its originator is likely to be the key and sometimes only question for establishing liability, for which we must have a clear answer.
- third and relatedly, the process of inference of intent from algorithmic action must have human fallacy as a backstop. We cannot expect developers or controllers of algorithms to prognosticate any possible anticompetitive effect that may result from their actions, as this would certainty hinder the deployment of innovative algorithms. However, we might want to hold them accountable (if not liable) for those choices by requiring transparency and explainability of automated decisions, as is currently done in the field of data protection law[66]. This is indeed the most pressing question: to what extent can objective antitrust intent be inferred from a set of actions performed by an algorithm, such that they can be linked to negligence in design and control? On one hand, antitrust

[61] A good example is the "signals" for triggering the appearance of Product Universal, and/or its appearance in the middle to top position of the results in the first page: the number of stores and the number of shopping comparison engine in the top-3 generic search results. See Decision, para. 391.
[62] Decision, para. 512.
[63] Decision, para. 491.
[64] Nicolo Zingales, 'Antitrust Intent in The Age of Algorithmic Nudging' (October 15, 2018). Available at SSRN: https://ssrn.com/abstract=3266624
[65] A phenomenon that Stucke and Grunes call "nowcasting": see Maurice E. Stucke and Allen Grunes, *Big Data and Competition Policy* (Oxford University Press, 2016).
[66] See article 13 (2) (f), article 14 (2) (g), article 15 (h), article 22 as well as Recital 71 of that Regulation.

intent can serve as a safeguard against the imputation to an algorithmic controller or designer of any possible impact an algorithm can generate on the market. On the other hand, an insufficiently clear definition of its role can be chilling investment and innovation in the development of predominantly beneficial technologies, simply because they might conceivably produce anticompetitive outcomes.

- fourth, the establishment of a "safe harbor" is advisable in order to cabin investment and innovation into algorithmic technologies that comply with some fundamental principles. The safe harbor would need to be framed within an appropriate institutional and procedural safeguards (above all, a fair and independent dispute resolution procedure) and include a framework of 'notice and explanation' for undertaking that consider themselves to be adversely affected by the algorithm in their ability to compete in the market. This framework would grant the algorithmic operator immunity from liability for any differential treatment which puts an undertaking competitive disadvantage (*vis a vis* the operator himself or a third party) as long as a dedicated procedure was put in place to receive such notices and respond within an appropriate timeframe. The affected undertaking, if unconvinced by the explanation, could then submit that together with its substantiated claim to an independent body, which could order the readjustment of the ranking of that undertaking but also establish the allocation of litigation costs, as well as impose penalties for baseless complaints. Furthermore, algorithmic operators would not be entirely immune from scrutiny if they were somehow aware of facts, irrespective of a notice, that would make the detrimental impact apparent. To make that more specific, the safe harbor could include among its conditions the adherence to a due diligence procedure for the design of algorithms that can effectively impact consumer choice through the selection or ranking of content. Such procedure could for instance rely on established techniques to detect the existence of bias[67], maintain a record of that testing for inspection by a competition or judicial authority (or the independent body proposed in this section), and even define a threshold of adverse impact warranting a change of the existing rules or criteria. This could be imposed to the whole industry of online intermediation companies, as recently done in the European Commission's proposed Regulation on Platform to Business Fairness (RP2BF).

Q8

I believe that broader regulatory measures promoting access to data and standardization on data portability would be a significant step forward. Furthermore, should the UK leave the EU as planned, a regulation equivalent to the RP2BF is warranted, in order to promote transparency and equality of opportunity on intermediating platforms.

Q10

There is one further aspect which is worth putting to the attention of competition regulators. This is the evolving sophistication of practices of product integration and other nudging practices, where consumers are not strictly forced but merely encouraged to undertake the desired action. This is likely to be a particularly complex area of inquiry in the context of personalized offerings, as companies can thanks to greater data collection and the advances in data analytics identify consumer biases and exploit them to accomplish the desired outcome.

[67] See Christian Sandvig et al. 'Auditing Algorithms: Research Methods for Detecting Discrimination on Internet Platforms', Data and discrimination: converting critical concerns into productive inquiry (2014), 1-23. See also Karen Levy and Solon Barocas, 'Designing Against Discrimination in Online Markets' 32 Berkeley Technology Law Journal (2018).

The two *Microsoft* cases[68] provide a good illustration of the ability of EU competition law to reach situations where a consumer is only nudged towards integration of two products, despite retaining the ability to replace the tied product with one produced by competitors. In particular, the European Commission took issue with the fact that customers were not given choice, as Microsoft's softwares were pre-installed with Windows and could not be uninstalled[69]. In the Media Player case, the Commission elaborated on the rationale for intervening in the presence of "soft" tying of this type on grounds that the integration generated strong network effects for content providers and developers using Windows Media Player, which would eventually result in market tipping, and that intervention by a competition authority would need to occur before the tipping in order to be effective[70]. Similarly, in its recent *Google Android* Decision the Commission took issue with Google's efforts to ensure that manufacturers and mobile network operators pre-installed its search and browser apps, considering that users who find search and browser apps pre-installed on their devices are likely to stick to these apps.[71]

Where the exercised choice is the result of deception or undue infuence, consumer protection law may be able to step in, recognizing the abusive nature of practices where consent to a new service is effectively forced upon a consumer, thus obviating the need for antitrust intervention. This is precisely what happened in a recent decision by the Italian competition authority (AGCM), though under its consumer protection mandate, concerning the update of WhatsApp's terms of service and privacy policy in August 2016[72]. The AGCM found that WhatsApp had engaged in an unfair and aggressive commercial practice for two main reasons: first, while it had provided users with a full screen informing about the existence of changes to the existing privacy policy and terms of service, the same screen only contained the option of integrally accepting those changes, whereas only a user clicking to read more information about those changes would find out that he or she could refuse to accept some of those (namely, the sharing of metadata with Facebook). Secondly, WhatsApp warned users in the notice communicating the update that those who did not express their acceptance within 30 days would no longer be able to use the service, which bolstered the effect of inducement that was already generated by the incomplete notice[73].

This scenario concerns a practice that may be considered unfair from a consumer and a data protection law perspective, but has also a strong linkage with competition law: the possible change of privacy policy to enable data sharing with Facebook was in fact one of the considerations taken into account as part of the competitive assessment in the European Commission's clearance of Facebook's acquisition of Whatsapp[74], although it did not play a major role in the outcome due to the dynamic nature of the affected markets and the simultaneous use by consumers of multiple communication services. However, despite the fruitful interaction of the forces of consumer protection, data protection and competition law

[68] Commission Decision of 24 March 2004 relating to a proceeding under Article 82 of the EC Treaty (Case COMP/C-3/37.792 *Microsoft);* upheld on appeal in Case T-201/04, *Microsoft* EU:T:2007:289; Commission decision of 16 Dec. 2009 relating to a proceeding under Article 102 of the Treaty on the Functioning of the European Union and Article 54 of the EEA Agreement (Case COMP/C-3/39.530—*Microsoft (tying*)).

[69] See Nicolas Petit and Norman Neyrink, 'Back to Microsoft I and II: Tying and the Art of Secret Magic' (2011) 2 (2) Journal of European Competition Law & Practice, 117-121.

[70] Commission Decision in Case COMP/C-3/37.792 *Microsoft*, supra n **Error! Bookmark not defined.**, para. 946.

[71] European Commission, Press Release IP/18/4581, 18 July 2018.

[72] Provvedimento PS 10601 and Provvedimento CV 154, both available at <http://www.agcm.it/stampa/comunicati/8754-ps10601-cv154 -sanzione-da-3milioni-di-euro-per-whatsapp,-ha-indotto-gli-utenti-a-condividere-i-loro-dati-con-facebook.html> accessed 10 July 2018.

[73] *Ibid.*, para. 62.

[74] European Commission, Press Release IP 14–1088, 3 October 2014, http://europa.eu/rapid/press-release_IP-14-1088_en.htm.

in this particular case[75], it is not clear how far competition law can go with its existing instrumentarium to pursue practices which exploit consumer biases but formally leave them free to choose among competing alternatives. Arguably, finding a violation of consumer or data protection law may be used by the authority to document that a given undertaking is not competing on the merits, and therefore reinforcing its dominant position through its abusive conduct[76]. The strong intersection with consumer and data protection law calls for specific and swift cooperation mechanisms between the respective authorities[77], which are likely to be of increasing importance with the increase of personalized interactions.

List of Annexes

Annex 1: Pre-formatted version of 'Data Protection Considerations in EU Competition Law: Funnel Or Straitjacket For Innovation?', in P. Nihoul and P. Van Cleynenbreugel (eds.), *The Role of Innovation in Competition Analysis* (Edward Elgar, 2018).
Annex 2: Submitted version of 'Antitrust Intent in The Age of Algorithmic Nudging' (October 15, 2018). Available at SSRN: https://ssrn.com/abstract=3266624.
Annex 3: "*Apple/Shazam*: Data Is power, But Not A Problem Here", Competition Policy International (December 2018).
Annex 4: "Between A Rock And Two Hard Places: WhatsApp At The Crossroad of Competition, Data Protection And Consumer Law" (2017) 33 (4) Computer and Security Law Review, 553-558.

[75] See Nicolo Zingales, 'Between a rock and two hard places: WhatsApp at the crossroad of competition, data protection and consumer law '(2017) 33 (4) Computer and Security Law Review, 553-558.
[76] Bundeskartellamt, 'Preliminary assessment in Facebook proceeding: Facebook's collection and use of data from third-party sources is abusive', Press Release (19 December 2017), https://www.bundeskartellamt.de/SharedDocs/Publikation/EN/Pressemitteilungen/2017/19_12_2017_Facebook.pdf?__blob=publicationFile&v=3.
[77] See Nicolo Zingales, 'Data protection considerations in EU competition law: funnel or straitjacket for innovation?', in Paul Nihoul and Pieter Van Cleynenbreugel (eds.), *The Role of Innovation in Competition Analysis* (Edward Elgar Publishing, Cheltenham 2018).

DATA PROTECTION CONSIDERATIONS IN EU COMPETITION LAW: FUNNEL OR STRAITJACKET FOR INNOVATION?

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[forthcoming in P. Nihoul and P. Van Cleynenbreugel (eds.), *The Role of Innovation in Competition Analysis* (Edward Elgar, 2018)]

As technological advancement dramatically increases the opportunities and reduces the costs for data collection and processing, a variety of companies have been seizing those opportunities to offer more targeted products or services. The pattern is simple: data on consumer identities, preferences and behavior is collected from a variety of sources and collated into comprehensive databases, which are then used to identify relevant consumer characteristics and enable a better targeting. The potential of garnering and using data to improve productivity and customization is indeed a central promise of the so called "big data revolution"[1], which tends to favor actors with greater capacity to collect, retain and analyze consumer data. In this context, where data constitutes a valuable input for the attainment of efficiencies and a driver of competitive dynamics, competition law inevitably complements data protection law as an instrument to prevent entities with access to strategic datasets to abuse their position to the detriment of consumers, and individuals more generally.

Needless to say, these instruments differ significantly in their goals and methods of operation. Most importantly for purposes of this chapter, their differences are significant when it comes to the evaluation of the legal justifications offered by undertakings for a range of actions they take in relation to those datasets. A comparison of the legal tests applied in these two different areas in the EU illustrates two contrasting approaches to the incorporation of innovation into legal analysis, with important consequences for competition enforcement. The significance of those differences implies that great caution should be exercised in the implementation of rising "integrationist" theories of data protection and competition law. This chapter exposes a blind spot in that emerging integrationist trend, suggesting that the process used to collapse data protection considerations into a competition assessment has consequential implications for the treatment of "data-driven innovation" and "data protection innovation". Having illustrated the deficiencies of the procedures currently in place, and recognizing that the fundamental right to data protection cannot be ignored by competition enforcers, it calls for the definition of a comprehensive framework of cooperation between competition and data protection authorities.

Section 1 describes the ecosystem created by the valorization of personal data, in particular explaining the two types of innovation introduced by this ecosystem: data-driven innovation and data protection innovation. Section 2 observes that the current framework for innovation defenses in EU competition law is deficient when it comes to these new forms of innovation. Section 3 provides an overview of the legal basis for data-driven innovation in EU data protection law. Section 4 maps out the possible intersection between data protection and competition analysis in this regard, identifying different needs and scenarios of cooperation between competition and data protection authorities. Finally, Section 5 summarizes the key points of this contribution and concludes.

[1] V. Mayer- Schonberger, *Big Data: A Revolution That Will Transform How We Live, Work, and Think* (Eamon Dolan/Mariner Books 2014).

1. The rise of data innovation

Though it might not be apparent yet, we are living what the World Economic Forum has called the fourth industrial revolution[2]. After the breakthrough technological advancements generated by the mechanization of production, electricity and automation, we are now in the midst of a transition to a world where digital technologies are becoming embedded into physical objects, enabling the control or monitoring of their activity through the use of algorithms. While part of this transition can be ascribed to the third industrial revolution, which consisted in the automation of production through electronics and information technologies, two distinctive features suggest that we are witnessing a different phenomenon: the innovation produced over the last few years by this technological paradigm is occurring at a much higher pace, and is affecting and increasingly disrupting all industries[3].

This shift has been dubbed "industry 4.0", which involves the redefining the dynamics of manufacturing along the above-mentioned lines. This process is enabled by a number of factors. Without doubts, the increased capacity and the lower cost of computing, the subsequent deployment of increasingly intelligent robots and machines and the expansion of wireless communications and networks play a pivotal role in this ecosystem[4]. But it would be disingenuous to overlook that this technological advancement is fueled by the boost in collection and processing of data, generated by the continuous interaction of humans with machines and between machines themselves. With the rise of artificial intelligence and the exponential growth of so called "big data"[5], increasingly advanced techniques of data analytics are being put to the service of businesses across a variety of sectors. Data and the ability to make sense of them constitute an essential asset to enable businesses to adjust their offerings to demand and attain one of the key attributes of industry 4.0: mass customization[6].

Data innovation has made its strides outside manufacturing, as well. Researchers from MIT reported that companies in the top third of their industry in the use of data-driven decision making were, on average, 5% more productive and 6% more profitable than their competitors.[7] In the B2C environment, digitization and connectivity have transformed the way in which products and services are sold and marketed to consumers. Not only does the "digital footprint" left behind by consumers when surfing online allow businesses to make customized offers, obtaining a better match to their preferences: increasingly, it enables a variety of business models dependent on advertising, which becomes more profitable when specifically targeted to consumer preferences.

In sum, the current ecosystem both for production and distribution heavily depends on data collection and analysis, which in turn are favored by the ability of the technologies that we

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[2] Klaus Schwab, 'The Fourth Industrial Revolution: what it means, how to respond', World Economic Forum (14 January 2016). Available at <https://www.weforum.org/agenda/2016/01/the-fourth-industrial-revolution-what-it-means-and-how-to-respond/> accessed 10 September 2016.

[3] *Id.*

[4] European Parliament, "Industry 4.0", http://www.europarl.europa.eu/RegData/etudes/BRIE/2015/568337/EPRS_BRI(2015)568337_EN.pdf

[5] Although the definition of «big data» is contested, there seems to be unanimity with regard to its reference to the three «Vs», i.e. Velocity, Variety and Volume. .It is generally understood as referring to large amounts of different types of data, produced at high speed from multiple sources, whose handling and analysis require new and more powerful processors and algorithms. See Autorité de la Concurrence and Bundeskartellamt, 'Joint Report on Competition Law and Data' (10 May 2016), at http://www.autoritedelaconcurrence.fr/doc/reportcompetitionlawanddatafinal.pdf; European Data Protection Supervisor, https://secure.edps.europa.eu/EDPSWEB/edps/Consultation/bigdata .

[6] European Parliament, supra note 4, p. 5.

[7] Andrew McAfee, Erik Brynjolfsson, 'Big Data: The Management Revolution' (2012) Harvard Business Review 61.

deploy to automatically generate data. However, this seemingly virtuous circle finds important limits in its reliance on personal data, i.e. any information relating to an identified or identifiable individual[8]. The individuals to whom those data relate (so called "data subjects") enjoy a panoply of rights with regard to the processing (a word that refers broadly to "any operation or set of operations performed upon personal data"[9]) and are entitled to hold data processing actors liable for breaches of those rights and of the general principles of data protection, as well as prevent non-compliant processing. Since the Lisbon Treaty, rights and principles of data protection law are firmly grounded on the fundamental right to data protection enshrined in article 8 of the EU Charter of Fundamental Rights[10]. Moreover, the increasing salience of data protection law in our society is generating a compliance culture, evidenced by several instances of market players using greater privacy[11] (or the more vague term of "data ethics") as a differentiator and source of competitive advantage[12].

In addition to limits arising from data protection law, the regime of data processing chosen by a particular company can be constrained by the operation of competition law: if data constitutes the lifeblood of the information economy, it should not come as surprise that competition authorities pay particular attention to the possible exploitative or exclusionary consequences of a given data processing practice. Due to the recent and fast-moving rise of the data-driven economy, this is a relatively unchartered area for competition enforcers; but surely one of increasing attention. In this ecosystem, it becomes important to define a consistent process for competition authorities to identify the benefits generated by data practices, in order to distinguish between desirable and undesirable conduct. This challenge also brings to the fore one important question: to what extent should authorities account for data protection considerations in competition analysis? While only scratching the surface of these broad regulatory challenges, this chapter aims to illustrate one specific reason why developing an answer to this question is important: competition and data protection law have very different mechanisms to account for innovation in relation to the use of data.

To appreciate this point, it is helpful to distinguish two types of innovative data practices: data-driven innovation and data protection innovation. While data-driven innovation can be broadly characterized as the use of big data to improve production or distribution and better match customer preferences, data protection innovation creates market value through greater protection of personal data, directly responding to the concerns of mischiefs associated with the so called "surveillance capitalism"[13]. Before addressing in the following section how these two types of innovation can be accounted for in competition analysis, two disclaimers are in order: first, the focus will be exclusively on formal defences that can be used to advance data-related innovation in EU competition law, disregarding the flexibilities available within more general tools, such as market definition, market power and the construction of the applicable

[8] See Data Protection Directive, art. 2 (a).
[9] *Id.*
[10] See Juliane Kokott and Christoph Sobotta, 'The distinction between privacy and data protection in the jurisprudence of the CJEU and the ECtHR' (2013) 3 (4) *International Data Privacy Law*, 222; Raphaël Gellert and Serge Gutwirth, 'The legal construction of privacy and data protection' (2013) 29 (5) *Computer Law & Security Review* 522; Maria Tzanou, 'Data protection as a fundamental right next to privacy? 'Reconstructing' a not so new right' 2013(3) *International Data Privacy Law* 88; Orla Lynskey, *The Foundations of EU Data Protection Law* (Oxford University Press 2015), pp. 89-132.
[11] In this chapter, the term "privacy" is used as shorthand for "data privacy", which is the international version of the European concept of "data protection". The terms "privacy" and "data protection" are therefore used interchangeably in the text, unless specific reference is made to "privacy *and* data protection" which refer to the broader universe of the fundamental rights enshrined in article 7 and 8 of the EU Charter of fundamental rights.
[12] For a couple of examples in this sense see Rana Forhooar, 'Privacy is a competitive advantage', *Financial Times* (15 October 2017).
[13] Shoshana Zuboff 'Big Other: Surveillance Capitalism and the Prospects of an Information Civilization' (2015) 30 *Journal of Information Technology*, 75.

theory of harm[14]. This focus is purportedly restricted in order to illustrate the challenges in relying on the current instrumentarium for innovation justifications in a world where competition is entangled with data protection considerations. Second, the analysis is limited to data protection considerations in what is often referred to as *antitrust* analysis, although the broader term "competition law" will be used here. The role of data protection considerations in merger control is out of the scope of this contribution, due to its substantially different type of analysis (inherently prospective and administrative in nature) and the different form of integration between the two disciplines in that context.

2. Competition law: what room for innovation considerations?

2.1. Efficiency and the (other?) goals of competition law

There are conflicting views in the literature and the case law concerning the aim that EU competition law is supposed to serve. According to the European Commission, competition law's ultimate aim is to protect consumer welfare and promote the efficient allocation of resources[15]. However, the European Court of Justice has endorsed a different formulation of this goal, emphasizing that competition law protects the "the structure of the market"[16], "competition as an institution"[17], or "competition as such"[18]. This formulation aligns with the conventional interpretation of the Treaty rules[19], and is reinforced by recent EU Commission's references to parallel Treaty goals that found protection through competition law, such as supporting growth, jobs and the competitiveness of the EU economy and fostering a competition culture[20].

In the face of the open question in economic theory on the nature of the relationship between

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[14] See for instance Marcus Glader, *Innovation Markets and Competition Analysis: EU Competition Law and US* (Edward Elgar, 2006). Pablo Ibáñez Colomo, 'Restrictions on Innovation in EU Competition Law' *European Law Review* 41 (2016) 2 pp. 201-219; Howard Shelanski, 'Information, Innovation, and Competition Policy for the Internet', (2013) 161 *University of Pennsylvania Law Review* 1663

[15] See Commission Notice: Guidelines on the application of Article 81(3) of the Treaty [2004] OJ C101/97, para. 13; see also Commission Notice: Guidelines on the application of Article 81 of the EC Treaty to technology transfer agreements [2004] OJ C101/2, para. 5. See also Victoria Daskalova, Consumer Welfare in EU Competition Law: What Is It (Not) About?', 11 (1) Competition Law Review (2015) pp. 131-160

[16] See e.g. Case 85/76, *Hoffman La Roche AG v Commission*, [1979] ECR 461, para 91; *NV Nederlandsche Banden Industrie Michelin v Commission of the European Communities* (*Michelin I*), [1983] ECR 3461, para. 70.

[17] Opinion of Advocate General Kokott, Case C-95/04, *British Airways v. Commission* [2007] ECR I-2331, para 69.

[18] See e.g. Case C-501/06 *P, GlaxoSmithKline Services Unlimited tegen Commissie van de Europese Gemeenschappen*, [2009] ECR I-09291, para. 63; ECJ, Case C-209/10, *Post Danmark*, ECLI:EU:C:2012:172, paras 21-24.

[19] See, for instance: Ioannis Lianos, 'Some Reflections on the Question of the Goals of EU Competition Law', in Ioannis Lianos and Damien Geradin (eds.) *Handbook on European Competition Law: Substantive Aspects* (Edward Elgar, 2013); Oles Andriychuk, 'Rediscovering the Spirit of Competition: On the Normative Value of the Competitive Process' (2010) 6(3) European Competition Journal 575; Eugène Buttigieg, *Competition Law: Safeguarding the Consumer Interest. A Comparative Analysis of US Antitrust Law and EC Competition Law* (Wouters Kluwer, 2009); Josef Drexl, Wolfgang., Kerber, Ruppercht Podszun (eds.), *Competition Policy and the Economic Approach – Foundations and Limitations* (Edward Elgar, 2010); Paul Nihoul, 'Freedom of Choice': The Emergence of a Powerful Concept in European Competition Law' (2012) 3(12) Concurrences 55; Okeoghene Odudu, 'The Wider Concerns of Competition Law' (2010) 30 (3) Oxford Journal of Legal Studies 599-613; Cristopher Townley, *Article 81 EC and Public Policy,* (Hart Publishing, 2009); Ben van Rompuy, *Economic Efficiency: The Sole Concern of Modern Antitrust Policy?* Non-Efficiency Considerations under Article 101 TFEU (Wouters Kluwer, 2012); D. Zimmer. (eds.) (2012), *The Goals of Competition Law*, (Edward Elgar, 2012).

[20] See Commission Staff Working Paper Accompanying the Report From The Commission on Competition Policy 2011, p.3; Joaquin Almunia, "Competition policy for the post-crisis world: A perspective", Speech/14/34 of 17th January 2014 delivered in Bruges, Belgium. At http://europa.eu/rapid/press-release_SPEECH-14-34_en.htm . For more detail, see Victoria Daskalova, 'Consumer Welfare in EU Competition Law: what is it (not) about?, (2015) (1) The Competition Law Review 11, 14.

market structure and innovation[21], Larouche and Schinkel submit that the EU's focus on the competitive process is precisely what gives competition enforcers sufficient latitude to protect "innovation paths", ensuring that firms have the ability to present new products and services to their customers[22]. Key to their argument is the recognition that for each success story, there are many similar undertakings that fail to win the favor of their customers; and that for this reason, it is important that competition law preserves the ability of those undertakings to "find their way to the market"[23]. In this sense, what has been called "freedom to compete"[24] may constitute an important element of innovation policy, under the assumption that it will produce dynamic efficiencies.

Accepting this premise, the question becomes whether this comprehensive notion of "competition" can be pinned down to more specific benchmarks. The debate in this respect has been framed as one of whether competition law should protect any value other than economic efficiency[25], or whether broader public policy objectives should enter competition analysis[26]. While contributions to the debate have been insightful, one can observe a tendency to abstract from the economic character of competition law, quickly leading to the argument that competition enforcers should also protect other values[27]. In my view, this argument conflates the two different issues of definition of economic efficiency in EU competition law, on the one hand, and institutional coherence of EU on the other. The latter in particular is ensured by the general policy-linking clause of article 7 TFEU[28], as well as more specific clauses of articles 8 to 16 TFEU, which prevent the Union from disregarding objectives which may have little or even nothing to do with competition analysis. It is therefore only as a matter of *enforcement* that these additional policies become relevant, requiring the enforcing institution (a category that includes the judiciary) to consider the impact on additional values. Yet, it is submitted that this does not allow enforcers to imbue competition analysis with broader public policy objectives: their ultimate duty is to apply the rules so that competition in the internal market is not distorted[29], which is ostensibly an economic objective[30].

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[21] See in particular Joseph Schumpeter, *Capitalism, Socialism and Democracy* (Harper & Row, 1947); Kenneth J Arrow "Economic Welfare and the Allocation of Resources for Invention", in R. Nelson (ed.), *The Rate and Direction of Inventive Activities: Economic and Social Factors* (Princeton University Press 1962); Philippe Aghion et al., 'Competition and Innovation: An Inverted-U Relationship' 120 (2005) Quarterly Journal of Economics 701; Jonathan B Baker, 'Beyond Schumpeter vs. Arrow: How Competition Fosters Innovation', 3 (2007) *Antitrust Law Journal* 575.

[22] Pierre Larouche and Marteen Pieter Schinkel, 'Continental Drift in the Treatment of Dominant Firms: Article 102 TFEU in contrast to Section 2 Sherman Act', in Daniel Sokol (ed.), *Oxford Handbook of International Antitrust Economics* (Oxford University Press 2014), 153-187.

[23] Ibid.

[24] Pinar Akman, 'The Role of Freedom in Competition Law' (2014) 34 (2) *Oxford Journal of Legal Studies*, 183. Liza Lovdahl Gormsen, *A Principled Approach to Abuse of Dominance in European Competition Law* (CUP, 2012).

[25] See in this regard, the 2014 annual conference held at the Ameican Antitrust Insittute entitled "The Inefficiencies of efficiency", and the related paper and supporting materials, at <http://www.antitrustinstitute.org/2014annualconference> accessed 15 September 2016. See also van Rumpuy (2012), supra note 19.

[26] See Townley, supra note 19; Giorgio Monti, 'Article 81 EC and Public Policy' 39 (2002) 5 *Common Market Law Review*, 1057.

[27] See e.g. Van Rumpuy, supra note 19; Suzanne Kingston, *Greening Competition Policy* (Cambridge University Press 2012); Federico Ferretti, *EU Competition Law, the Consumer Interest and Data Protection: The Exchange of Consumer Information in the Financial Sector* (Springer, 2014).

[28] "The Union shall ensure consistency between its policies and activities, taking all of its objectives into account and in accordance with the principle of conferral of powers».

[29] See Treaty on the Functioning of the European Union, Protocol (n.27) on the Internal Market and Competition.

[30] One may of course contend that laws and regulations contribute to the definition of the type of "competition" that is permitted in the internal market (e.g., outlawing conduct which constitute a financial or environmental offence), thereby injecting public policy considerations into the analysis. However, the effect of those public

A different question, which remains open, is how that economic objective should be pursued in individual cases: for example, when do choice considerations outweigh the benefits of price cuts? When (that is, with reference to what interference threshold) does the goal of the internal market trump a "pure" competition analysis? While the latter question has found some specific answers in the case law[31], we are still in the dark when it comes to the meaning of "undistorted competition" as a trade-off between static and dynamic efficiencies.

Certainly, the preoccupation for the distortion of the competitive process is a central component of EU competition law. The key to understanding the notion of "competitive process" is not to be fixated on a static notion of economic efficiency, which is typically measured via price, quantity or even quality parameters given the prevailing market conditions. Taking into account dynamic efficiencies requires the adoption of a more complex "consumer choice" or "consumer sovereignty" approach, which has been defined as enabling customers to choose the products they consider as best to fit their needs[32] and to influence the competitive process acting according to their preferences[33]. This means that competition law should not protect only the consumers of a particular product: doing so may be in conflict with the interest of the consumers of other actual or potential products that would otherwise be brought to the market. As illustrated by Nihoul, this line of reasoning can be found in several cases, starting from *Hoffman La Roche* where the Court expressed its concern for:

> […] the objective of undistorted competition within the common market, because- unless there are exceptional circumstances which may make an agreement between undertakings in the context of article 85 and in particular of paragraph (3) of that article permissible, [these practices] are not based on an economic transaction which justifies this burden or benefit but *are designed to deprive the purchaser or restrict his possible choices of sources of supply* and to deny other producers access to the market[34] .

However, this choice-based perspective does not provide an exhaustive answer to the question of how much these dynamic considerations ought to be weighed in competition analysis. This in itself seems appropriate, given that the weight of innovation may vary significantly depending on the industry and the specific conduct at issue[35]. What is more problematic, however, is that such trade-offs are typically made in a "black box", without an effective ability of the concerned undertakings to contest the innovation theory put forward against it. This is due in no insignificant part to the limited room for defences within articles 101 and 102.

Given EU competition law's preoccupation with the competitive process in preserving consumers' ability to choose potentially new products or services, one would expect innovation considerations to be integral part of competition analysis. From a structural perspective,

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policy considerations is to constrain the interpretation of the enforcer, rather than creating discretionary mechanisms for policy leverage.

[31] See for example Case 42/84, *Remia and Others v Commission* [1985] ECR 2545, para 22; Joined Cases C-403/08 and C-429/08, *Football Association Premier League Ltd and Others v QC Leisure and Others* and *Karen Murphy v Media Protection Services Limited* [2011] ECR I-9083, para 139. Joined Cases C-468/06 to C-478/06 *Sot. Lélos kai Sia and Others* [2008] ECR I-7139, paragraph 65.

[32] Paul Nihoul, The Emergence of a Powerful Concept in European Competition Law, available at SSRN: http://ssrn.com/abstract=2077694 or http://dx.doi.org/10.2139/ssrn.2077694, p. 5.

[33] Ioannis Lianos, 'The Price/Non Price Exclusionary Abuses Dichotomy: A Critical Appraisal' , (2009) 2 *Concurrences Review*, para 10, citing by way of comparison the different formulation by Neil Averitt and Robert Lande, 'Consumer Sovereignty: A unified theory of Antitrust And Consumer Protection law', 65 (1997) *Antitrust Law Journal* 713 ("the set of societal arrangements that causes that economy to act primarily in response to aggregate signals of consumer demand, rather than in response to government directives or the preferences of individual businesses").

[34] ECJ judgment of 13 February 1979, Case 85/76 *Hoffmann-La Roche &. Co. AG v Commission* [1979] ECR 46, at 90.

[35] See Mark Lemley, 'Antitrust-Specific Policy for Innovation', (2011) 2011 *Columbia Business Law Review* 637.

however, this is not the case: for both article 101 and article 102 TFEU, innovation arguments are relegated to the tail end of the enquiry. Recognizing this structural bias in competition analysis is important given the advantage that the European Commission (or the relevant competition authority) has in framing the case, imposing on the defendant the burden of rebutting the allegations. Due the burden imposed on defending undertakings and the limited review conducted by the EU's judicature[36], legal battles are often lost over the admissibility and success of defences to alleged infringements of EU competition law.

2.2. The place for innovation considerations in article 101

Article 101 (1) prohibits agreements or concerted practices that have as their object or effect the prevention, restriction or distortion of competition. This means that there are two types of restrictions: one where sufficient proof of likely anticompetitive effects must be produced (restriction by effect); and the second one where such effects are presumed (restriction by object). The latter category is reserved to restrictions that reveal to be "sufficiently deleterious" to competition in light of the legal and economic context[37]. The Opinion of Advocate General Wahl in *Cartes Bancaires*[38] suggests that such revelation occurs on the basis of two alternative factors, i.e. economic science and the experience gathered by the court. Furthermore, the Commission observes that (non-exhaustive) guidance in this respect can be found in its block exemption regulations, guidelines and notices – in particular, suggesting that "blacklisted" or "hardcore" restrictions in those document would generally be considered "by object".

In the former category, a balancing takes place to determine whether the loss in *intra-brand* competition as a result of the agreement is necessary to improve *inter-brand* competition, or viceversa[39]. If this is the case, then the agreement falls outside article 101 (1) because it does not produce likely anticompetitive effects. However, when an agreement between undertakings falls within the prohibition of article 101 (1), it can still be exempted under article 101 (3) under the following well-known conditions:

a) The agreement must contribute to improving the production or distribution of goods or contribute to promoting technical or economic progress;
b) The agreement should allow consumers a fair share of the resulting benefits;
c) The restrictions must be indispensable to the attainment of these objectives; and
d) The agreement must not afford the parties the possibility of eliminating competition in respect of a substantial part of the products in question.

The articulation of each of these conditions has been addressed in detail by the Commission Guidelines, its case-law as well as specific scholarly contributions on the subject[40]. For purposes of this discussion, it suffices to highlight an important difference between the

[36] For a holistic assessment, see Nicolas Petit and Damien Geradin, "Judicial Review in European Union Competition Law: A Quantitative and Qualitative Assessment" in Massimo Merola and Jaques Derenne (eds.) *The Role of the Court of Justice of the EU in Competition Law Cases* (Bruylant 2012); Heike Schweitzer, 'Judicial Review in EU Competition Law', in Damien Geradin & Ioannis Lianos (eds.), *Research Handbook on EU Antitrust Law* (Edward Elgar Publishing, 2014).

[37] See Case C-67/13 P, *Groupement des cartes bancaires (CB) v European Commission*, EU:C:2014:2204, paras 359 and 360; Case C-209/07, *Competition Authority v Beef Industry Development Society Ltd and Barry Brothers (Carrigmore) Meats Ltd* (*BIDS)* [2008] ECR I-08637par 15; *Allianz Hungária Biztosító and Others*, C-32/11, EU:C:2013:160, para 34 and the case-law cited.

[38] Case C-67/13 P, *Groupement des cartes bancaires (CB) v European Commission.* ECLI:EU:C:2014:2204.

[39] See Joined Cases 56/64 and 58/66, *Consten and Grundig*, [1966] ECR 429. See also Commission Guidelines on the application of Article 81(3) of the Treaty (2004/C 101/08), para. 17.

[40] See e.g. Ben van Rumpuy, supra note 19; Saskia King (2015) *Agreements that restrict competition by object under Article 101(1) TFEU: past, present and future*. PhD thesis, The London School of Economics and Political Science. Available at <http://etheses.lse.ac.uk/3068/> accessed 10 September 2016.

balancing conducted under article 101 (1) and the similar exercise undertaken pursuant to article 101 (3). As clearly stated by the Commission[41] and the Courts[42], it is exclusively within article 101 (3) that an assessment is made of the pro-competitive benefits produced by that agreement, and of whether they outweigh the anti-competitive effects. Thus, the exercise conducted under article 101 (1) is one of different nature.

The Guidelines provide some more specific insight on what that exercise entails: first, it requires a comparison of the state of competition in the absence of the agreement with the one resulting from the existence of the same: the so called "counterfactual"[43]. Second, for the purposes of analysing the restrictive effects of an agreement, the Commission explains that it is normally necessary to define the relevant market[44], and to assess *inter alia* "the nature of the products, the market position of the parties, the market position of competitors, the market position of buyers, the existence of potential competitors and the level of entry barriers".

One may not call this analysis "balancing" in a technical sense[45], but it is in practice a multi-factor test with the same logic, where each element can weigh in favor or against a finding of anticompetitiveness. Though according to the Commission this exercise does not evaluate the benefits to competition stemming from the agreement, this type of evaluation is in fact often implicit in weighing different dimensions of competition, such as interbrand v. intrabrand. However, this test explicitly weeds out the assessment of improvements in quality, productivity, and dynamic efficiencies more generally, even though those may well have significant implications on interbrand and intrabrand competition.

On the other hand, the test incorporates an additional component which recognizes the necessity of certain restrictions of competition as a means to obtain legitimate objectives. This so called "ancillarity" concept has been implicitly part of EU competition law since *Societe' Technique Miniere v Mascinenabau Ulm*, where the Court held that an exclusive license to a distributor does not infringe article 101 (1) to the extent that it is "really necessary for the penetration of a new area by an undertaking" [46]. The issue of necessity was also central in evaluating the ancillarity of exclusive licensing to intellectual property in *Nungesser KG v Commission*[47] and *Coditel v Cine Vog Films Sa (No. 2)*[48], both revolving around the appropriate amount of exclusivity that would attract sufficient investment. Thus, an observation of these early cases suggested that, by allowing the imposition of restrictions commensurate to securing the appropriate incentive for investment, the Court effectively incorporated dynamic considerations through the backdoor of article 101 (1).

However, subsequent case law significantly narrowed the room for this dynamic interpretation: distilling the concept of ancillarity from the guidelines for the assessment of joint ventures (and

[41] See Guidelines, para 11.
[42] See Case T-522/03, *Van den Bergh Foods*, [2003] II-04653 para 107; Case T-112/99, *Métropole télévision* (*M6*) and others, [2001] ECR II-2459, para 74.
[43] See for instance Damien Geradin and Ianis Girgenson, ' The Counterfactual Method in EU Competition Law: The Cornerstone of the Effects-Based Approach' in Jacques Bourgeois and Denis Waelbroeck (eds.) *Ten years of effects-based approach in EU competition law* (Bruylant, 2013).
[44] However, the Guidelines also to skip market definition and show anti-competitive effects directly, by analysing the conduct of the parties to the agreement on the mark. See Guidelines, para 27. However, it t is clear that such assessment can be done only for very serious violations, and always by adopting a tentative and hypothetical market definition to initiate the assessment.
[45] From a narrow definitional standpoint, balancing means "considering the competing interests of the litigants (or of society more generally) and giving judgment for the side with the weightier interests". See Patrick M. McFadden, The Balancing Test, (1988) 29 *Boston College Law Review* 585.
[46] Case 56/65 *Société Technique Minière v Maschinenbau Ulm* [1966] ECR 235, para 250.
[47] Case 258/78, *Nungesser KG and Kurt Eisele v Commission* [1982] ECR 2015.
[48] Case 262/81, *Coditel SA v Cine Vog Films SA* (No 2) [1982] [2001] ECR II-02459.

in particular, the notices on ancillary restrictions[49] and on joint ventures[50]), the General Court ruled in *Metropole* that "ancillary restraints" refer to those that are "objectively necessary" to implement an operation[51]. Specifically, the evaluation of "necessity" cannot imply an assessment, in the light of the competitive situation on the relevant market, of whether the restriction is indispensable to the *commercial success* of the main operation[52], or the establishment of the undertaking on the market on a long-term basis[53]. In other words, it appears that indispensability cannot be used to justify restrictions that secure profits going beyond short-term commercial viability. This rigid approach to the interpretation of necessity was confirmed by the recent judgment in *Mastercard v Commission*, where the Court held that the mere fact that the operation is more difficult to implement without the restriction, or even less profitable, cannot justify a claim 'objective necessity'[54]. Clearly, this stringent notion of "indispensability" does not bode well with the uncertainty that is intrinsic to innovation processes, or with their non-linear ability to generate additional consumer demand. As a result, using this limited escape permitted under article 101 (1) seems inappropriate in the absence of an ability to provide the decision-maker with a detailed plan of quantification, a timeline for materialization of the expected gains, and an explanation of why the restriction(s) would be indispensable to that end.

There is also another possible line of defence with regard to ancillarity. Whereas the majority of cases referred to a notion of ancillarity based on necessity for a commercial transaction, a few of them revolved around necessity for the fulfillment of a regulatory function entrusted to a particular private entity. The Court considered that account must be taken of the objectives pursued by the decision of the association, which it found to be connected "with the need to make rules relating to organization, qualifications, professional ethics, supervision and liability, in order to ensure that the ultimate consumer of legal services and the sound administration of justice are provided with the necessary guarantees in relation to integrity and experience". Subsequent cases have held this "regulatory ancillarity" doctrine applicable to other public authorities, such the Portuguese Order of Chartered Accountants (*Oficiais de Conta*)[55], the Association of Italian Geologists (*Italian Geologists*)[56] and the Italian Observatory for road traffic safety and social security (*Consulta generale per l'autotrasporto e la logistica*)[57]. The notion of public authority has been extended to international regulatory bodies recognized by international law, such as the International Olympic Committee (*Meca Medina*)[58]. However, it is more controversial whether such doctrine can be invoked by private

[49] Commission Notice on restrictions directly related and necessary to concentrations, OJ C 56, 05.03.2005, pp. 24-31.
[50] Commission Notice on the concept of full-function joint ventures under Council Regulation (EEC) No 4064/89 on the control of concentrations between undertakings, OJ C 66, 2.3.1998, pp. 1–4.
[51] Case T- 112/99 *Métropole télévision (M6), Suez-Lyonnaise des eaux, France Télécom and Télévision française 1 SA (TF1) v Commission of the European Communities* [2001] ECR II-02459, para 109.
[52] Para 115.
[53] Para 120.
[54] Case C-382/12, *MasterCard Inc. and Others v European Commissio*n (not yet published), para. 91. Note that this seems to overrule the standard proposed by the Commission in its Guidelines, which refers to *difficulty* in implementation of the non-restrictive transaction as a valid basis for ancillarity claims. See 101 (3) Guidelines, para. 31 (emphasis added).
[55] Case C-1/12 *Ordem dos Técnicos Oficiais de Contas v Autoridade da Concorrência* [2013] 4 CMLR 20.
[56] Case C-136/12, *Consiglio nazionale dei geologi v Autorità garante della concorrenza e del mercato and Autorità garante della concorrenza e del mercato v Consiglio nazionale dei geologi* [2013] 5 CMLR 40.
[57] Joined Cases C-184/13 to C-187/13, C-194/13, C-195/13 and C-208/13, *API - Anonima Petroli Italiana SpA,* ECLI:EU:C:2014:2147.
[58] Case C 519/04 P, *David Meca-Medina and Igor Majcen v Commission of the European Communities* [2006] ECR I-06991.

organizations which have *not* been officially entrusted with authority by the State[59]. There is no case law supporting this interpretation, and the ECJ ruling in *Slovak Banks* seems to suggest otherwise, clarifying that it is not for private undertaking to take steps to ensure compliance with legal requirements.[60] This would seem to apply *a fortiori* where undertakings appeal to the pursuit of self-proclaimed public interests in order to take actions which amount to an infringment of competition law.

It is therefore through article 101 (3) that innovation can more realistically be pleaded as defence to what would constitute otherwise an agreement in violation of article 101. Although the test of article 101 (3) appears on its face as demanding as article 101 (1) when it comes to indispensability, the Commission has suggested a more flexible interpretation, by referring to any restriction being "reasonably necessary" for the efficiency in question[61]. Importantly, the focus of this analysis is not whether in the absence of the restriction the agreement would not have been concluded (as in the case of ancillarity), but rather whether more efficiencies are produced with the agreement or restriction than in the absence of the agreement or restriction[62]. Furthermore, the Guidelines specify that the Commission will not use (potentially demanding) hypothetical or theoretical alternatives as benchmark for the counterfactual. Counterfactuals offered by the undertakings will be readily accepted, unless it is *reasonably clear* that there are realistic and attainable alternatives[63]".

The test under article 101 (3) presents at least four significant obstacles for the incorporation of data protection and data-driven innovation. First, it is too deterministic for the kind of innovation that is generated today by the accumulation and use of data. In particular, the test requires under its first prong to "describe and explain in detail what is the nature of the efficiencies and how and why they constitute an objective economic benefit"[64]. The explanation must include, in case the agreement has yet to be fully implemented, any projections as to the date from which the efficiencies will become operational so as to have a significant positive impact in the market[65]. In the case of data-driven innovation, this seems a little bit like fitting a square peg into a round hole: since it is claimed that big data is reversing the direction of discovery, using data to foster hypotheses rather than "prove" existing hypotheses[66], the idea of predetermining the outcome of the innovation process seems irreconcilable with the very concept of big data – at least as long as a competition authority will not relax the requirements of specificity and quantifiability[67]. In the case of data protection innovation, the main problem is again one of quantifiability and commensurability: without a specific value attributed to enhanced data protection, how can it be balanced against a restriction of competition?

A second hurdle consists in the narrow focus on economic efficiency for the purposes of the first prong of this test. The Guidelines limit the pursuit of goals of other Treaty provisions to

[59] In this sense, see Richard Wish and David Bailey, *Competition Law* (5th ed., Oxford University Press 2015) 141. Cf. Katarina Pijetlovic, *EU Sports Law and Breakaway Leagues in Football* (Springer 2015) 153–54.
[60] Case C-68/12, *Protimonopolný úrad Slovenskej republiky v Slovenská sporiteľňa a.s.*, EU:C:2013:71, para. 20.
[61] Guidelines on the application of Article 81(3) of the Treaty, OJ C 101, 27.4.2004, p. 97–118, para 73.
[62] Id., para 74.
[63] Id., para 75 (emphasis added).
[64] Para 57.
[65] Para 58.
[66] Victor Mayer-Schoenberger and Yann Padova, 'Regime Change? Enabling Big Data through Europe's New Data Protection Regulation' (2016)17 Columbia Science and Technology Law Review 315, 319.
[67] For a recommendation in this sense, see Miguel De la Mano De la Mano, 'For the customer's sake: The competitive effects of efficiencies on the European merger control', 11 (2009) European Commission's Enterprise Directorate-General Enterprise Papers, para 52.

the extent that they cannot be subsumed under the four conditions of Article 101(3)[68]. In fact, the practice of the Commission is to frame broader welfare benefits such as environmental protection[69], sustainable development[70] and employment[71] as part of the efficiency test. However, this canonic interpretation of economic efficiency as the maximization of welfare can only capture improvement in privacy protection generated for consumers insofar as a market for the product with additional privacy can be readily identified[72]. Although one could make speculations about the desire of consumers to receive such protections, in the absence of specific surveys or other measurement techniques, they are likely to be dismissed as unsubstantiated.[73]

A third obstacle lies in the heterogeneous preferences of consumers, in relation to the requirement to pass on a fair share of the benefits to consumers. While the Commission has taken (in line with the case law) a broad interpretation which includes final and intermediate consumers[74], less flexibility is provided with regard to the identification of the group of consumers to which the benefits must accrue. In particular, the Commission requires the efficiencies generated by the restrictive agreement within a relevant market to be sufficient to outweigh the anti-competitive effects produced by the agreement within that same relevant market. Only in the case of substantial consumer commonality with the market affected by the restriction, can the efficiencies achieved in a separate market be taken into account[75]. It should be noted that the EU case law does not offer consistent support for this requirement[76], and most recently in *Mastercard* expanded the scope for cross-market efficiency analysis by accepting efficiencies in a connected market even in the absence of consumer commonality, as long as those benefits produce "objective advantages" for the consumers in the market concerned[77]. However, while the feedback effects generating the objective advantages in that judgment were grounded on the clear interdependency between two-sided payment markets, it seems harder to claim such objective advantage where the product in one market is simply used as "bait" for acquiring customer data to be used in a variety of different markets, often unbeknownst to consumers and for different purposes than those upon which they agreed to the disclosure. On a more positive note, the "objective advantage" formulation opens the possibility to consider broader benefits than the efficiencies described in the Guidelines, though it remains to be seen whether the advantage must materialize on the other side of a two-sided market. What this implies in terms of data-driven innovation, in particular when it comes to personal data, is that the test will not be satisfied in the absence of a feedback loop going back to the market in which the customer data were collected. The benefit does not need to accrue to each and every

[68] Para 42.
[69] *Exxon/Shell* (Case IV.33.640) Commission Decision 94/322/EC (1994)OJ L 144/20.
[70] *CECED (*Case IV.F.I/36.718) Commission Decision 2000/475/EC (2000) OJ L 187/47.
[71] *Syntehtic Fibers* (Case IV/30.810) Commission Decision 84/380/EEC (1984) OJ L 207/17, paras 37-38; *Stichting Baksteen* (Case IV/34.456) Commission Decision 94/296/EC (1994) OJ L 131/15, paras 27-28; *Ford/ Volkswagen* (Case IV/33.814) Commission Decision 93/49/EC [1993] OJ L 20/14.
[72] A fitting example to give an idea of this type of complexity is the "Chickens for Tomorrow" case decided in 2015 by the Dutch competition authority. The authority released a full paper explaining the economic analysis it conducted to attribute a market value to increased animal welfare. See Authority for Consumers and Markets, 'ACM's analysis of the sustainability arrangements concerning the 'Chicken of Tomorrow'' (26 January 2015), available at https://www.acm.nl/en/publications/publication/13789/ACMs-analysis-of-the-sustainability-arrangements-concerning-the-Chicken-of-Tomorrow.
[73] For the same reason, Townley advocates for the incorporation into the assessment of wider social and environmental costs and benefits, for which there is no market price. See Townley, supra note 19.
[74] Para 84.
[75] See Guidelines, para 43, referring to Case T-131/99, *Shaw* [2002] ECR II-2023, paragraph 163; Case C-360/92 P, *The Publishers Association v Commission* [1995] ECR I-23, paragraph 29. See also *Continental/United/Lufthansa/Air Canada* (Case COMP/39.595) Commission Decision of 23 May 2013.
[76] See *Compagnie Générale Maritime and Others*, T-86/95 [2002] ECR II-1011, paras 343-345; Case T-168/1 *GlaxoSmithKline Services Unlimited v Commission* [2006] ECR II-2969, para 248.
[77] *MasterCard and Others v Commission*, C-382/12P, EU:C:2014:2201, para 241.

consumer of that group[78], but one may wonder whether there would be a sufficient number of consumers that for instance consider behaviorally targeted advertising an "objective advantage".

Finally, the fourth obstacle to the incorporation of innovation considerations within article 101 (3) is the fulfillment of its fourth condition (no elimination of competition). While this condition provides a safeguard against efficiencies that undermine the competitive process, the challenge lies in fitting into this notion of competition a dynamic perspective – competition *for* the market as opposed to competition *in* the market. This seems to be disfavored by the Commission's reliance on the presumption that when competition is eliminated, the agreement's long-term welfare losses will outweigh short-term efficiency gains[79]. The challenge presented by this condition for the incorporation of dynamic considerations is also apparent in the case for restrictive agreements that could potentially be justified on data-driven innovation grounds: for example, a shared data repository among competitors to keep track of trends and predict future prices on the basis of recent historical data might increase industry know-how, but also constitute a red flag for its facilitation of collusion. A different reasoning would apply to apparently anticompetitive conduct which produces important data protection innovation, such as for example a boycott amongst browser vendors against websites that track users across the web. In that context, it can be argued that the condition of "no elimination of competition" militates against granting an article 101 (3) exemption for an action that proactively shapes a particular consumer demand for privacy (as it eliminates price competition that would otherwise exist), but legitimates one aimed at satisfying an existing demand for it (as the reduction in price competition is outweighed by the increase in another existing dimension of competition).

2. 3. The place for innovation considerations within article 102

Article 102 TFEU prohibits undertaking from abusing their dominant position in the market, making reference to an indicative list of abusive practices. However, that list is incomplete on the conditions under which such practices materialize. It has therefore been the task of the Commission and the Courts to give content to such categories. This has led to the identification of a number of categories of conduct falling within the definition of so called "*prima facie*" abuse. This characterization, in recognition of the inherent difficulty in the area of unilateral conduct to distinguish between aggressive competition from conduct which harms consumers, rules out the existence of so called "per se" or "object" abuses under article 102[80]. The conclusive establishment of abuse can indeed be avoided by a defendant, either showing efficiency benefits that outweigh any anticompetitive effects, or alleging an objective justification for that conduct.

This bi-partite structure of article 102, where efficiencies are not assessed as integral part of the initial assessment but on a separate and additional step, is not immune from criticism. It is typically justified on the premise that a dominant undertaking has the special responsibility not to distort competition, which is already endangered by the presence of the undertaking in question[81]. This section does not aim to make sense of the test devised for *prima facie* abuses, which has been discussed at length in the literature[82]. In contrast, it provides highlights of the

[78] See Guidelines, para 86 ; and *Asnef-Equifax v Ausbanc* C-238/05 [2006] ECR I-11125, para 70.
[79] Para 105.
[80] See in this sense, the Opinion of AG Colomer in Joined Cases C-468/06 to C-478/06 *Sot. Lélos kai Sia v GlaxoSmithKline* [2008] ECR I- 7139, para 75.
[81] See *Hoffman la Roche*, para 91.
[82] See, among the many excellent contributions, Pinar Akman, The Concept of Abuse (Hart Publishing, 2012); Ekatrina Rousseva, *Rethinking Exclusionary Abuses in EU Competition Law: Rethinking Article 82 of the EC*

difficulties faced by defendant in raising innovation considerations as justifications.

The first, most obvious ground for defence is the efficiency justification. While the case-law has not always been consistent on the admissibility of such justifications[83], it is now well settled that in an abuse of dominance inquiry, "it has to be determined whether the exclusionary effect [...] may be counterbalanced, or outweighed, by advantages in terms of efficiency which also benefit the consumer"[84].

Furthermore, since its 2009 Guidance Paper, the Commission offered a framework for evaluating efficiencies within article 102 which bears striking resemblance with 101 (3). Its 4 conditions are:

(a) the efficiencies have been, or are likely to be, realised as a result of the conduct;

(b) the conduct is indispensable to the realisation of those efficiencies ;

© the likely efficiencies brought about by the conduct outweigh any likely negative effects on competition and consumer welfare in the affected markets; and

(d) the conduct does not eliminate effective competition, by removing all or most existing sources of actual or potential competition[85]

This framework, subsequently endorsed by the Court of Justice in *Post Danmark* and *Telia Sonera*[86], was hailed as a welcome step towards the legalization of a more economic approach to article 102[87]. But not without some criticism for the high bar imposed on defendants for efficiency claims[88]: due to it being essentially a replication of article 101 (3), it carries with it many of the problems illustrated in section 2.2. Instead of repeating the same analysis conducted there, it is sufficient to make two observations: first, the conditions for efficiency under 102 do not contain a requirement of "fair share" of benefits to consumers. While this appears to be a relaxation of the bar imposed in article 101 (3), the Guidance paper in fact suggests that this is inextricably linked to, and arguably subsumed within, the fourth condition: "In [the] absence [of rivalry between undertakings] the dominant undertaking will lack adequate incentives to continue to create and pass on efficiency gains"[89]. Second, the requirement of no elimination of effective competition appears to be significantly more restrictive in the case of a dominant company. The Paper's assertions that "Where there is no

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Treaty (Hart Publishing, 2010); Renato Nazzini, *The Foundations of European Union Competition Law: The Objective and Principles of Article 102* (Oxford University Press 2011); Liza Lovdahl-Gormsen, A Principle Approach to Abuse of Dominance (Cambridge University Press 2012).

[83] Compare: Case 322/81, *Michelin I* [1983] ECR I-3461, para 85; C-202/07, *France Télécom* [2009] ECR I-2369, para 217, *Atlantic Container* [1983] ECR I-3461 [2003] ECR II-03275 para 1112; With T-203/01, *Michelin II [*2003] ECR II-4071,para 98; C-95/04 P, *British Airway* [2007] ECR I-2331paras 69 and 86; T-201/04, *Microsoft*, 2007 II-3601para 1135; C-52/09, *TeliaSonera*, [2011] ECR I-527, para 76.

[84] Case C-95/04 P, *British Airways plc v. Commission* [2007], ECR I-2331.

[85] Guidance Paper, para 30.

[86] Case C-209/10*, Post Danmark v. Konkurrencerådet, para. 42.*; Case C-52/09, *TeliaSonera*, [2011] ECR I-527, para 76.

[87] Christian Alborn and Jorge Padilla, 'From Fairness To Welfare: Implications for the Assessment of Unilateral Conduct under EC Competition Law", in Mel Marquis and Claus-Dieter Ehlermann, *European Competition Law Annual 2007: A Reformed Approach to Article 82 EC* (Oxford University Press 2008).

[88]See e.g. John Temple Lang, 'Judicial review of competition decisions under the European Convention on Human Rights and the importance of the EFTA court: the Norway Post judgment', (2012) 38 *European Law Review* 464, at 487; Hans W Friederiszick and Linda Gratz, 'Dominant and Efficient – On the Relevance of Efficiencies in Abuse of Dominance Cases', in: OECD Policy Roundtables, The Role of Efficiency Claims in Antitrust Proceedings 2012 (DAF/COMP(2012)23), at 38.

[89] Para 30.

residual competition and no foreseeable threat of entry, the protection of rivalry and the competitive process outweighs possible efficiency gains[90]" reveal a fundamental distrust for innovations carried out by dominant firms who can act unconstrained from competition in the relevant market. This is only partly mitigated by the following statement that "[E]xclusionary conduct which maintains, creates or strengthens a market position approaching that of a monopoly can *normally* not be justified on the grounds that it also creates efficiency gains"[91]. All in all, the wording suggests that the conduct of a dominant firm (at least when it approaches a monopoly) will be scrutinized under article 102 for any potential exclusionary effects it may cause - even where it is proven to generate immediate and substantial efficiencies.

In addition to efficiency, a firm can raise a defence based on an objective justification. This defence relates to public policy concerns or other objective factors, i.e. that are beyond the control of the undertaking, which force it to take a particular course of conduct[92]. For example, a refusal to deal could be justified by a legitimate concern that sharing a facility would undermine its quality, security, or safety[93]. Likewise, a restriction of parallel trade can be justified on the basis of differences in national regulation, to the extent that (a) State intervention is one of the factors liable to create the opportunities for parallel trade in the first place and (b) a different interpretation of Article 102, rejecting any possibility of justification, would have left dominant firms only the choice 'not to place its medicines on the market at all in a Member State where the prices of those products are set at a relatively low level[94]'. Along the same lines, one can infer from the Commission's decision in *Port of Genoa*[95] and *Spanish Airports*[96] that the protection of the environment may constitute an objective justification to a *prima facie* abuse[97].

Potentially, this justification is highly valuable for a dominant undertaking in the data-driven economy, as it opens the door for the incorporation of data protection innovation so long as the restrictions of competition are not disproportionate (for example, installing automatic browser ad blocking which by default blocks all domains from a competitor). However, it is important to bear in mind that not all actions can be taken by an undertaking in the name of objective necessity: the Commission warns in its Guidance paper that proof of whether conduct of this kind is objectively necessary must take into account the competences defined by the applicable regulatory framework, including by recognizing that it is normally the task of public authorities to set and enforce public health and safety standards[98]. As the Court explained in *Hilti*, "it is not the task of a dominant undertaking to take steps on its own initiative to exclude products which it regards, rightly or wrongly, as dangerous or inferior to its own product".[99] This line of cases seems to suggest that, somewhat in parallel with article 101 (1), the use of public policy as a justification is confined within the competences that are attributed to undertakings under the existing regulatory framework. Unlike with article 101 (1), however, this defence

[90] Para 31.
[91] Ibid. (emphasis added).
[92] Ekatrina Rousseva, 'The Concept of Objective Justification' 2 (2006) 2 Competition Law Review, 27, 28-29.
[93] FAG-Flughafen Frankfurt/Main AG, OJ 1998 L 72/30.
[94] Joined Cases C-468/06 to 478/06, *Sot Lelos kai Sia v GlaxoSmithKline*, para 67-68.
[95] 97/745/EC: Commission Decision of 21 October 1997 relating to a proceeding pursuant to Article 90 (3) of the EC Treaty regarding the tariffs for piloting in the Port of Genoa ; OJ L 301, 5.11.1997, p. 27–35.
[96] 1999/199/EC: Commission Decision of 10 February 1999 relating to a proceeding pursuant to Article 90 of the Treaty (Case No IV/35.703 - *Portuguese airports*) (notified under document number C(1999) 243);
OJ L 69, 16.3.1999, p. 31–39.
[97] T. Vijver , *Objective justification and Prima Facie anti-competitive unilateral conduct : an exploration of EU Law and beyond*. University of Leiden Dissertation (2014). Available at https://openaccess.leidenuniv.nl/handle/1887/29593.
[98] Para 29.
[99] Case T-30/89 *Hilti v Commission* [1991] ECR II-1439, paragraph 118-119; See also Case T-83/91 *Tetra Pak International v Commission* (Tetra Pak II) [1994] ECR II-755, paragraphs 83 and 84 and 138.

seems to leave room for undertakings who have *not* been officially entrusted with a public function to take initiative for the protection of public policy, to the extent that this is recognized as a valid public policy and does not clash with the regulatory system in place. Once again, the concept of objective justification implies that the measures taken must be proportionate, meaning that they will not be considered valid if there are less restrictive alternatives. From a data protection innovation standpoint, it will be interesting to see whether a broader concept of restrictiveness could be used, which is not limited to the effects on competition, but considers the impact of a measure on conflicting rights and interests protected by the Treaty (such as freedom of expression, for instance). Perhaps one way to reconcile the test with the importance of human rights in the EU is by reading the requirement of respect for fundamental rights into the notion of competition that the Treaty protects (as would be required by article 51 of the Charter of Fundamental Rights)[100].

A particular example of objective justification is the conduct of "competition on the merits". By this term, courts generally refer to a conduct whereby an undertaking takes reasonable and proportionate steps to protect its own commercial interests, even if such protective measures might have some exclusionary effect[101]. It is thus apparent that this concept provides more leeway than the above mentioned efficiency defence. The ruling of the Court in *Post Danmark I* offered a more telling characterization of the concept:

> "[N]ot every exclusionary effect is necessarily detrimental to competition […] Competition on the merits may, by definition, lead to the departure from the market or the marginalisation of competitors that are less efficient and so less attractive to consumers from the point of view of, among other things, price, choice, quality or innovation."[102]

It follows that any conduct appealing to customers on the basis of price, choice, quality and innovation constitutes competition on the merits, as long as the pursuit of those dimensions of competition is accomplished through reasonable and proportionate measures by the dominant firm. Arguably, the special responsibility attributed to such firms by EU competition law justifies a finding of infringement where the exclusionary effect of a measure outweighs its pro-competitive impact on any of those dimensions. This explains the "proportionate" part of the defence; however, it still leaves us with the open question of what constitute "reasonable" steps, which seems to imply a balancing test. While it is impossible in the absence of clarifying decisions to forecast all possible flavors of "unreasonableness", one discerning line to narrow down the ranges of conduct that are admissible to protect one's own commercial interest could be found in the violation of other laws. It is true, in that respect, that the Court ruled in *Astra Zeneca* that "the illegality of abusive conduct under Article 102 TFEU is *unrelated* to its compliance or non-compliance with other legal rules and, in the majority of cases, abuses of a dominant position consist of behaviour which is otherwise lawful under branches of law other than competition law"[103]. However, *Astra Zeneca* concerned the different scenario where an undertaking had *not* infringed the law applicable in addition to competition law –but rather used that law strategically. As a result, it is arguable that the "unrelated" characterization in

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[100] According to article 51, "The provisions of this Charter are addressed to the institutions and bodies of the Union with due regard for the principle of subsidiarity and to the Member States only when they are implementing Union law. *They shall therefore respect the rights, observe the principles and promote the application thereof in accordance with their respective powers*." (emphasis added).

[101] See for example *United Brands*, para 189. See also e.g. Joined cases C-468/06 to C-478/06 *Sot. Lélos kai Sia v. GlaxoSmithKline* [2008] ECR I-7139, para 69; Case T-65/89 *BPB Industries and British Gypsum v Commission* [1993] ECR II-389 para 9; *Deutsche Telekom* [2010] ECR I-9555 para 177; *AstraZeneca,* para 130; *Konkurrensverket v TeliaSonera Sverige AB*, [2011] ECR I-527, para 24; *Sot. Lélos*, supra note 94, para 69. See also Case T-219/99 *British Airways v Commission* [2003] ECR II- 5917, para 243.

[102] *Post Danmark*, para. 19.

[103] C 457/10, *AstraZeneca AB and AstraZeneca plc v European Commission*, ECLI:EU:C:2012:770, para 132 (emphasis added).

that ruling should not be interpreted *per se* as a bar to considering non-compliance with "extra-competition" rules as a factor in determining whether a particular conduct constitutes competition on the merits.

In that judgment, the Court highlighted the difference between the objective of Article 102 and the primary purpose of the EU legislation invoked by the defendant (Directive 65/65)[104]. This difference of objectives prevented compliance with pharmaceutical regulation from being used as a "safe harbor" for purposes of enforcement of competition law, which would otherwise be required from a *ne bis in idem* perspective. This aligned with previous cases where the Court rejected the idea of non-intervention by competition law into the self-contained regime for telecom regulation, by holding that even the encouragement of a given practice by the regulator could not absolve the dominant company from its special responsibility under Article 102[105]. However, the Court also explicitly recognized in *Telia Sonera* the inapplicability of Article 102 TFEU to conduct that is explicitly *required* by national legislation, or *where the legal framework eliminates any possibility of competitive activity*[106]. This means that competition law will apply irrespective of the obligations imposed by national legislation, so long as those obligations do not force undertakings from engaging in conduct which prevents, restricts or distorts competition[107].

If competition law is not *required* (except for those isolated circumstances) to take into account the regulatory frameworks in assessing the conduct of an undertaking, nothing seems to prevent competition authorities from doing so to give content to the concept of "competition on the merits", a concept to which neither the Commission's Guidelines nor the case law have given substantive meaning (despite the recommendations made by the OECD in this sense)[108]. This is a powerful instrument to encourage innovation alongside the boundaries of legitimacy offered by concurrently applicable regulatory frameworks. However, it does not provide a silver bullet for all possible interactions between competition and data protection laws (a point developed more in depth in Section 4 below) and may well result in adverse effects on data protection or even on competition, if not used properly. As it will become clear in the following section, there are significant specificities in the concept of innovation recognized under data protection law, suggesting that the analysis undertaken in that context may not always be transposable in the competition field, and viceversa.

3. The place for innovation in data protection law

3.1. A helicopter view of EU data protection law: spotting innovation honey pots

[104] Council Directive 65/65/EEC of 26 January 1965 on the approximation of provisions laid down by Law, Regulation or Administrative Action relating to proprietary medicinal products. OJ 022 , 09/02/1965 pp. 369 - 373.
[105] *Deutsche Telekom*, para. 84. See also case 123/83 *Clair* [1985] ECR 391, para. 23 (finding that the mere fact that an agreement has been sanctioned by the public authority, thereby making it binding, cannot remove it from article 101 (1)).
[106] *Telia Sonera*, para 49 (emphasis added).
[107] Para 50.
[108] Wolf Souter, *Coherence in Competition Law* (Oxford University Press 2015) p. 110-111; referring to OECD Roundtables on Competition Policy Working Paper No. 56 (OECD Publications, 2005) .
<https://www.oecd.org/competition/abuse/35911017.pdf> accessed 15 September 2016.

Data protection law is an expanding body of EU law. The legal instrument upon which it has been based for over 20 years is the Data Protection Directive (DPD)[109], which stipulates a dual objective: first, protecting the fundamental rights of individuals, and in particular the right to privacy with respect to the protection of personal data; second, the free flow of personal data in the internal market[110]. The Directive sets the standards for data protection by EU Member States, thereby preventing such grounds from being raised as a barrier to data flows.[111] On 25 May 2018, the Directive will be replaced with Regulation EU/2016/679, also known as the General Data Protection Regulation (GDPR), which strengthens the level of protection and introduces important changes to the existing regulatory regime[112]. It should also be noted that, much like in EU competition law, a number of guiding documents have been issued to assist in the interpretation of key concepts. These guidelines are offered in the form of "advisory opinions" by the advisory body called "Article 29 Working Party" (hereinafter "A29WP"), composed by representatives of different data protection authorities in Europe[113], and which after entry into force of the GDPR will be replaced by a similar body with expanded competences - the European Data Protection Board.

By way of introduction, it should be borne in mind that data protection law applies to the processing of *personal* data. This means that data processing entities will not be required to follow the rules set forth in the Regulation whenever the data being processed "does not relate to an identified or identifiable natural person" (in technical jargon, a "data subject"[114]) or is "rendered anonymous in such a way that the data subject is no longer identifiable"[115]. It follows that complete anonymization of the data collected would in principle represent a viable strategy for companies to engage in limited profiling informing a company's strategies, to the extent that such profiling does not raise to a level of specificity enabling the identification of any particular individual[116]. However, recent studies of re-identification have shown that true anonymization is extremely hard to attain in a world of big and widely available data: simply stripping the data of some identifiers is unlikely to do the job[117]. Escaping the application of data protection rules requires the deployment of "state of the art" anonymization techniques, possibly involving a combination of multiple measures. Moreover, while these techniques preserve the ability to derive insights from aggregate data, they may lessen the utility of the

[109] Directive 95/46 of the European Parliament and of the Council of 24 October 1995 on the protection of individuals with regard to the processing of personal data and on the free movement of such data; OJ L 281, 23/11/1995, p. 31-50.
[110] Orla Lynskey, *The Foundations of EU Data Protection Law* (OUP, 2015), pp. 46-88.
[111] In practice, conflicts between the two objectives may arise, for example with regard to how Member States define the implementation of the rules or the exceptions that can be invoked . See e.g. case C-73/07 *Tietosuojavaltuutettu v Satakunnan Markkinapörssi OY, Satamedia* [2008] ECR I-09831.
[112] Although the current analysis takes into account both of these instruments, for a comprehensive picture one should take into account the situation in different Member States. There are indeed many areas where Member States are given wide latitude, even under the GDPR, to implement EU data protection law.
[113] One can question whether the same effect can be ascribed to the soft law produced by this body as with the various Guidelines and Notices in EU competition law, which the European Court of Justice has found to trigger legitimate expectations (see e.g. Joined Cases C-189, 202, 205, 208 & 213/02 *Dansk Rørindustri*, para. 223). Nevertheless, this paper proceeds on the assumption that such guidelines will be followed, to the extent they have not been superseded by the GDPR.
[114] See article 4, (1) GDPR.
[115] To make this determination, the Regulation focuses on "whether means are reasonably likely to be used to identify the natural person, account should be taken of all objective factors, such as the costs of and the amount of time required for identification, taking into consideration the available technology at the time of the processing and technological developments". See Recital 26 GDPR.
[116] Importantly, such profiling may be used only in limited circumstances to take decisions based on automated processing that significantly affect individuals. See art. 22 GDPR, and the discussion in section 3.3 below.
[117] See Paul Ohm, 'Broken Promises Of Privacy: Responding to the Surprising Failure of Anonymization', 57 (2010) *UCLA Law Review* 1701,See also https://datafloq.com/read/re-identifying-anonymous-people-with-big-data/228.

datasets concerned to provide correlations between relevant attributes and observed or inferred behavior, which enable segmentation of population on the basis of common patterns.

Recognizing the challenge, the Regulation addresses a half-baked form of anonymization, called "pseudonymization", which consists of "the processing of personal data in such a manner that the personal data can no longer be attributed to a specific data subject without the use of additional information, provided that such additional information is kept separately and is subject to technical and organisational measures to ensure that the personal data are not attributed to an identified or identifiable natural person"[118]. This will be typically be the case for statistical research, which is defined as "any operation of collection and the processing of personal data necessary for statistical surveys or for the production of statistical results" and presupposes that its results or the personal data used to obtain them are not used in support of decisions regarding any particular legal person[119]. For all research, including the broad category of scientific research[120], pseudonymization is merely one of the possible technical and organizational measures to be adopted in order to ensure data minimization, where the ultimate goal is to have in place appropriate safeguards for the rights and freedom of the data subject[121]. Nevertheless, the Regulation is clear that, where possible, research purposes should be fulfilled anonymizing any further processing of the dataset[122]. In return for these obligations, processing for research purposes benefits from a number of derogations, some of which directly applicable[123] while others depend on Member State implementation[124]. Additionally, if an organization adopts pseudonymization, it will be exempted from compliance with a number of obligations under the Regulation, such as providing data subjects with access, rectification, erasure or data portability possibilities[125]. However, these exemptions do not relieve organizations from meeting all the remaining obligations, which include, most notably, the need to identify a legitimate legal basis for processing and the compliance with the principles of data protection: namely, the principles of lawfulness, fairness and transparency, purpose limitation, data minimization, storage limitation, and integrity and confidentiality[126]. The only exception to such principles is provided by article 5 (1) (b) and 5 (1) (e) for processing done for research purposes, and concerns the applicability of the principles of purpose limitation and storage limitation: given that it is not always possible to identify the purpose of processing in research, further processing and longer periods of processing are admissible when done solely for research purposes. This constitutes an important concession from an innovation standpoint, although conditional on the adoption of adequate safeguard measures in accordance with article 89 (1)[127]. Unfortunately, the absence of further details on the notion of appropriate safeguards

[118] See art. 4 (5).
[119] Recital 162 GDPR.
[120] The term is not defined by the Regulation but the examples provided refer to a wide range of scenarios, such as technological development and demonstration, fundamental research, applied research, and privately funded research. See Recital 159 GDPR.
[121] Article 89 (1) GDPR.
[122] *Id.*
[123] See articles 14 (information to be provided), 17 (right to erasure) and 21 (right to object) GDPR.
[124] In particular, the rights established in articles 15 (right to access), 16 (rectification), 18 (restriction of processing) and 21 (object), in accordance with article 89 (2) GDPR.
[125] See art. 11.
[126] Most notably, the principles of data quality listed in articles 6 of the DPD and 5 of the GDPR. Such principles include lawfulness, fairness and transparency; purpose limitation; accuracy; data minimization; storage minimization; integrity and confidentiality. To these, the Regulation adds a general obligation of "accountability", which implies the ability for each data controller to demonstrate compliance with all the above mentioned principles. See art. 5 (2) GDPR.
[127] In this respect, Recital 156 GDPR refers to technical and organizational measures aimed at minimizing the processing of personal data in pursuance of the proportionality and necessity principles. It also specifies that the processing of personal data for scientific purposes should comply with other relevant legislation, such as that on clinical trials.

for research purposes makes it difficult at present to assess the scope of application of the research exemption (i.e., what type of research and under what conditions), as that will largely depend on the national implementation of the GDPR.

Leaving aside the special cases of anonymized data and processing for research purposes, the key hurdle for the permissibility of data-driven innovation under EU data protection law is the existence of a valid legal basis for processing. Data protection law sets out a permission-based regime for the processing of personal data: unlike competition law, where business activity is permitted unless specifically forbidden, the regime for data protection law is one of authorization: data processing is forbidden, unless specifically permitted by law. Entities intending to process personal data must therefore identify a legal basis justifying their processing, in addition to the other requirements imposed by data protection law. Consent of consumers to the processing of data for a specific purpose constitutes merely one of the possible justifications for "lawful processing[128]". Aside from exceptional situations in which processing is necessary for the exercise of a public function, for the fulfillment of a legal obligation or to protect the vital interest of an individual, two frequently used grounds are available which may not be immediately ascertainable from the terms and conditions governing the relationship between a data subject and a "data controller" (i.e. the entity which defines the means and purpose of processing[129]).

First, processing is lawful whenever it is "necessary for the performance of a contract to which the data subject is party, or in order to take steps at the request of the data subject prior to entering into a contract"[130]. This means that essentially any processing which is implicit and instrumental to the contract will not require an additional consent to that required for the establishment of the object of the parties' agreement: an example often used is the use of one's name and address for the delivery of an online purchase. Since innovation presumes an alteration of existing products, services or operations, the claim that a new processing of personal data is essential appears to be weak or difficult to maintain at best, if the contract could be previously established or performed in a satisfactory way without the use of such personal information. The interpretation of "necessity" by the Article 29 Working Party is quite stringent, and seems unlikely to be able to accommodate any collection or use of personal data that could not be reasonably inferred from the stated purpose of processing[131].

Second, and most importantly from an innovation perspective, processing can be justified if it is "necessary for the purposes of the legitimate interests pursued by the controller or by a third party, except where such interests are overridden by the interests for fundamental rights and freedoms of the data subject"[132]. This caveat is slightly modified under the GDPR, which extends it to the interests *or* fundamental rights and freedoms of the data subject[133], expanding the range of elements that may be balanced against the interests of the controller or third parties[134]. The "legitimate interest" ground undoubtedly constitutes an appealing alternative to consent for innovations that are difficult to predict at the beginning of a contractual relationship, and especially so after the GDPR has introduced a "freely given" requirement for consent, clarifying that it is insufficient to justify processing when there is a significant

[128] See Article 7 of the DPD, and article 6 of the GDPR.
[129] See article 4, (7) GDPR.
[130] See art. 5 (b).
[131] Article 29 Working Party Opinion 06/14 on Legitimate Interest, pp. 16-17.
[132] See art. 6 (1) (f) GDPR.
[133] This is simply the correction of a mistake in transcription made with the DPD, as noted by the A29WP contrasting the official text in different languages. See A29WP, WP 217, p. 29.
[134] Article 6 (1) (f) GDPR also indicates that the weight rights or interests to be balanced is particularly important when the data subject is a child.

imbalance between the position of the data subject and the controller[135] and that utmost account will be taken whether the performance of a contract is conditional on the processing of personal data that is not necessary for the performance of the contract[136]. Thus, the legitimate interest offers the advantage to enable data controllers to do away with those stringent requirements of data subject permission, provided they can show any interest that is real (non speculative), sufficiently specific and "accepted by law"[137], as long as they adopt safeguards which sufficiently protect the interests or fundamental rights of the data subject.

At the same time however, the reliance on legitimate interest does not exempt the data controller from the need to declare that interest in order to ensure fair and transparent processing[138], and to conduct the balance of that interest with the interests or fundamental rights and freedoms of the data subjects ahead of processing. This means that the more significant implication of relying on this ground for processing is the greater "responsibilization" of data controllers, who are accountable for their self-assessment on the adequacy of the balancing, in addition to being expected to adopt technical and organizational measures to ensure the continued adequacy of their processing[139]. Such responsibilization aligns with the so called "risk-based approach" [140], according to which data controllers are required to adopt protective measures commensurate to the level of risk of harm to the rights and freedoms of the data subject arising from the data processing activities in question[141]. The calibration of the responsibilities of controllers on "the nature, scope, context and purposes of processing as well as the risks of varying likelihood and severity for the rights and freedoms of natural persons"[142] implicates the emergence of a differentiated regime of compliance with data protection law, with enhanced transparency and administrative requirements for data controllers involved in high risk processing.

The GDPR offers guidance on risk assessment by detailing the type of risks at stake (falling into the three categories of physical, material and non-material damage)[143] and providing

[135] Recital 43 GDPR.
[136] Article 7 (4) GDPR.
[137] See A29WP Opinion 06/14, supra note 131, p. 25.
[138] See articles 13 (1) (d) and 14 (2) (b) GDPR.
[139] This is a corollary of the principle of accountability established in article 5 (2) GDPR, which requires data controllers to be responsible for, and be able to demonstrate, compliance with the principles relating to the processing of personal data listed in article 5 (1) GDPR. See also Recitals 78 and 81 of the GDPR.
[140] For an overview of the role of risk assessment in data protection and beyond, see Niels van Dijka, Raphaël Gellert, Kjetil Rommetveit, 'A risk to a right? Beyond data protection risk assessments' 32 (2016) 2 Computer Law and Security Review 286.
[141] The GDPR builds the foundations for risk assessment and risk management by charging data controllers with obligations that are dependent on the level of risk of the activity they conduct: for example, those with high level of risk must make prior consultation with the DPA, who may decide to enjoin the conduct (see art. 36 GDPR). They are also required to notify both the DPA and the data subjects of any data breaches that are likely to result in a risk for the rights and freedoms of the individual, unless they have adopted appropriate organizational or subsequent measures to mitigate the risk, or the notification involves disproportionate effort (article 37 GDPR).
[142] Recital 89 and article 24 GDPR.
[143] In particular: "where the processing may give rise to discrimination, identity theft or fraud, financial loss, damage to the reputation, loss of confidentiality of personal data protected by professional secrecy, unauthorised reversal of pseudonymisation, or any other significant economic or social disadvantage; where data subjects might be deprived of their rights and freedoms or prevented from exercising control over their personal data; where personal data are processed which reveal racial or ethnic origin, political opinions, religion or philosophical beliefs, trade union membership, and the processing of genetic data, data concerning health or data concerning sex life or criminal convictions and offences or related security measures; where personal aspects are evaluated, in particular analysing or predicting aspects concerning performance at work, economic situation, health, personal preferences or interests, reliability or behaviour, location or movements, in order to create or use personal profiles; where personal data of vulnerable natural persons, in particular of children, are processed; or where processing involves a large amount of personal data and affects a large number of data subjects". See Recital 75 GDPR.

examples of high risks situations[144]. However, it does not dictate what level of risks is acceptable, or what measures should be taken by data controllers to prevent or mitigate certain risks. In other words, the standards of risk management remain largely unexplored. One suggestion in that regard is that EU data protection law should adopt a precautionary approach, prohibiting certain operations unless the controller can provide evidence of the innocuousness of the practice in question[145]. While adopting a precautionary approach may be seen as in tension with the force of innovation[146], such an approach would arguably be in line with the text and spirit of the GDPR when it comes to high-risk situations[147]. From this perspective, the role of codes of conduct and certification mechanisms will be crucial in providing data controllers with a minimum degree of legal certainty when undertaking such high-risk processing, by serving as parameters to demonstrate compliance[148].

A third and last possible avenue for data-driven innovation is to rely on the notion of "compatible use" in the further processing of legitimately acquired data. Despite the requirement of it to be "not incompatible" with the purpose(s) of the original processing, this notion leaves some room for creative interpretations. First, the purpose limitation principle has a specific exception for archiving purposes in the public interest, scientific or historical research purposes or statistical purposes, as long as Member States provide appropriate safeguards[149]. Thus, having legitimately acquired the data may be sufficient to allow any scientific or historical research, and even a statistical analysis for business purposes. Second, and equally importantly, article 6 (4) of the GDPR suggests that the assessment of compatibility with the original purpose(s) is rather flexible, where the further processing is not based on the data subject's consent or on a specific Member State law[150]. In particular, the exercise takes into account the following criteria:

(a) any link between the purposes for which the personal data have been collected and the purposes of the intended further processing; (b) the context in which the personal data have been collected, in particular regarding the relationship between data subjects and the controller; (c) "the nature of the personal data, in particular whether special categories of personal data are processed, pursuant to Article 9" (special categories of data), "or whether personal data related to criminal convictions and offences are processed, pursuant to Article 10"; (d) the possible consequences of the intended further processing for data subjects; and (e) the existence of appropriate safeguards, which may include encryption or pseudonymisation.

In practice, this assessment consists of an open-ended balancing, closely resembling the exercise conducted by data controllers to determine whether they have a valid legitimate

[144] Namely "systematic and extensive evaluation of personal aspects relating to natural persons which is based on automated processing, including profiling, and on which decisions are based that produce legal effects concerning the individual or similarly significantly affect the individual", "processing on a large scale of special categories of data," and "systematic monitoring of a publicly accessible area on a large scale". See Recital 91 GDPR.
[145] Raphaël Gellert, 'Data protection: a risk regulation? Between the risk management of everything and the precautionary alternative' 5 (2015) 1 International Data Privacy Law, 3, 18.
[146] See for instance Adam Thierer, 'Privacy Law's Precautionary Principle Problem' 66 (2014) 2 Maine Law Review, 467; Tal Zarsky, 'The Privacy–Innovation Conundrum' 19 (2015) 1 Lewis & Clark Law Review, 115.
[147] See Article 29 Working Party, 'Guidelines on Data Protection Impact Assessment (DPIA) and determining whether processing is "likely to result in a high risk" for the purposes of Regulation 2016/679' (WP 248 rev.01, 4 October 2017). See also art 22 GDPR discussed in section 3.3. below, establishing that an additional layer of safeguards applies for automated decisions which significantly affect individuals.
[148] See art. 24 (3) GDPR.
[149] See art. 6 (1) (b) DPD and 5 (1) (b) GDPR; and art. 89 GDPR. In particular, Recital 29 requires that such safeguards "rule out the use of the data in support of measures or decisions regarding any particular individual".
[150] The specific Member State law must have been designed to attain one of the objectives listed in art. 23 of the GDPR, which include national security, defence, law enforcement purposes (among others).

interest[151]. Those two balancing exercises will thus be conveniently dealt together in the following section.

3.2. A closer look at the two key balancing provisions

So far, we have seen the room available within data protection law to process data for the pursuit of research and development, concluding that the possible avenues are (1) anonymization; (2) research purposes; (3) legitimate interest; and (4) compatible use.

The assessment of (1) typically involves the balancing of factors of technical nature, which will not be discussed here as it falls outside of legal competence. With regard to (2), one may recall that the balancing concerns the purposes of research, on one hand, and appropriate safeguards for the rights and freedoms of the data subject(s) on the other. Importantly, there is significant room for derogations from certain articles of the GDPR as long as this is necessary for the fulfillment of research purposes without serious impairment. This alleviates the burden weighing on the shoulder of researchers, who must in any event adopt appropriate safeguards and respect all principles of data protection, including being grounded on a legitimate legal basis. It will be remembered that processing for research purposes benefits from an exemption to the purpose limitation principle, however, which significantly softens the rigidity of the mechanisms designed around the preservation of the contextual integrity of consent and legitimate interest[152]. As a result, balancing will be required when further uses rely on those legal grounds, although it will be significantly facilitated.

For this reason, and because it is not certain that innovation can always be channeled through a scientific process of research, it is important to examine the process for the establishment of (3) and (4), both of which involve the weighing and balancing of very similar factors. Formal guidance in this area was only recently provided by the A29 WP, through its Opinions 3/2013[153] and 6/2014 [154], and only in part incorporated into the GDPR. The former Opinion, with specific regard to the compatibility assessment of further processing, refers to the following factors:

(a) the relationship between the purposes for which the data have been collected and the purposes of further processing;

(b) the context in which the data have been collected and the reasonable expectations of the data subjects as to their further use;

(c) the nature of the data and the impact of the further processing on the data subjects;

(d) the safeguards applied by the controller to ensure fair processing and to prevent any undue impact on the data subjects.

As is apparent, these factors are slightly different from those subsequently adopted in the aforementioned article 6 (4) of the Regulation[155]: namely, the latter version subsumed the notion of "reasonable expectations" of criterion (b) into the broader concept of the "relationship

[151] See art. 6 (1) (f) GDPR and 7 (e) DPD.
[152] Contextual integrity is used here to refer to the idea of preventing the breach of the reasonable expectations of the data subject at the moment of collection of personal data. For a more in-depth discussion of the role of contextual integrity in privacy law, see Helen Nissembaum, *Privacy In Context: Technology, Policy, and the Integrity of Social Life* (Stanford University Press 2010).
[153] Article 29 Working Party, Opinion 03/2013 on Purpose Limitation.
[154] Article 29 Working Party, Opinion 06/2014, supra note 131.
[155] See supra, section 3.3.

between the data subjects and the controller"; and criterion (c) was divided in two parts, separating the nature of the data being processed from the impact on the data subject –and thereby clarifying that the latter does not necessarily depend (only) from the former). Although no criterion appears dispositive in the overall assessment, it is clearly the last element of the test which distinguishes the assessment from other types of balancing that are found in the law, including in the competition realm, for providing great latitude to data controllers to tilt the balance in favor of compatibility. The A29WP identified a number of safeguards that can be aptly used to that end: first of all, a necessary (but not always sufficient) condition towards ensuring compatibility is to *re-specify* the purposes. An additional notice to the data subjects and giving an opportunity to allow them to opt-in or opt-out is a second type of safeguard that may be required in certain situations[156]. In the extreme, one could also imagine a situation where the balance in the compatibility assessment weighs favor of incompatibility, but the request of a specific separate consent helps to compensate for the further purpose. Finally, the A29WP referred to an additional element which, depending on the situation and thus the type of concern arising from further use, may contribute to rebalancing the assessment in favor of compatibility: the adoption of technical and organizational measures aimed to attain the goals of data security (in particular, availability, integrity, and confidentiality of the data) and data protection (in particular transparency, isolation[157] and intervenability[158]). Although this list is not exhaustive, it provides key benchmarks not only for the self-assessment of data controllers, but also for subsequent measures that can be adopted or imposed to "normalize" a situation of violation of data protection principles.

The test conducted to identify a legitimate interest and balancing it with the interests of the data subject is slightly more elaborated. Once again, the A29WP does not provide exhaustive guidance, rather highlighting its focus on the necessity and proportionality of the interference with the data subjects' rights or interests. On one end of the scale, significant weight is attributed to the pursuit of an interest that pertains to a wider community (as opposed to merely the data controller), or which meets "cultural and societal expectations - even when not reflected directly in legislative or regulatory instruments"[159]. On the other end of the scale, the impact on the data subject is considered focusing on the nature of the data processed, the way in which it is being processed (e.g., the scale at which it is made available and whether it is combined with other data), and importantly, the reasonable expectations of the data subject[160]. Reasonable expectations play a pivotal role in determining the risks associated with the unauthorized use or disclosure of data, which explicitly include intangible harms "such as the irritation, fear and distress that may result from a data subject losing control over personal information, or realising that it has been or may be misused or compromised[161]". It is therefore unnecessary to identify a concrete "theory of harm" to invoke the breach of a reasonable expectation preventing reliance on article 6 (1) (f) DPD: in line with the risk-based approach, it will be sufficient to point to the intrinsic risk posed to the rights and interests of the data subject by a certain type of processing. However, at the same time it should be noted that the determination of "reasonable expectations" is specifically linked to "the status of the data controller, the nature of the relationship or the service provided, and the applicable legal or contractual obligations (or other promises made at the time of collection)"[162]. This suggests that the contractual relationship between data controllers and data subjects will be closely

[156] See Opinion 03/2013, supra note 153, p. 26.
[157] Isolation refers to the "adequate governance of the rights and roles for accessing personal data". See Article 29 Working Party Opinion 05/12 on Cloud Computing, p. 16.
[158] Intevenability refers to the ability of the data subject to to manage the data in terms of, e.g., access, deletion or correction of data.
[159] Opinion 06/14, supra note 131, p. 35.
[160] *Id.*, p. 24.
[161] *Id.*, p. 37.
[162] *Id.*, p. 40.

observed to determine the bounds of "reasonable expectations", enabling data controllers to contractually shape their ability to rely on legitimate interest, at least to a significant extent[163].

Finally, in line with the analysis conducted for the compatibility assessment of further processing, the overall balance is heavily impacted by the existence of appropriate safeguard measures, which include: increased transparency; privacy by design; privacy impact assessments; extensive use of anonymization techniques; data portability; unconditional right to opt-out; and technical and organizational measures to ensure that the data cannot be used to take decisions or other actions with respect to individuals ('functional separation'). Data controllers thus find in these exemplary safeguards a range of tools in order to address the data protection risks triggered by a specific type of data processing. Differently from the case of compatible use in further processing, however, such safeguards pertain to the balancing justifying the collection (and processing) of data in the first place, and cannot be introduced at a later stage in the data lifecycle. Risk management will therefore need to be conducted prior to collection, potentially leading a number of businesses to forego or delay innovative products or services to prevent or minimize risks. Once again, the risk management implications of the GDPR are not entirely clear, but the possibility to use adherence to codes of conduct as an indicator of compliance provides an incentive to align with the safeguards provided by those mechanisms.

3.3 A cautionary note: the additional limitations on automated decision-making

In addition to the framework described so far, it is important to bear in mind that data protection (and in particular, article 22 of the GDPR) provides an additional safeguard for human dignity and individual autonomy, which goes beyond the mere collection and use of a data subject's personal data and extends protection to situations where individuals can be impacted by decisions based on fully automated processing, including profiling. "Profiling" is defined in the Regulation as "any form of automated processing of personal data consisting of the use of personal data to evaluate certain personal aspects relating to a natural person, in particular to analyse or predict aspects concerning that natural person's performance at work, economic situation, health, personal preferences, interests, reliability, behaviour, location or movements"[164]. Profiling is here used as an illustration of a situation where a decision may be based on the processing of data relating to one or more persons (those constituting the basis of the profile), yet such data is not sufficient to identify the individual subjected to the decision under the definition of personal data of article 4 of the GDPR.

Without this additional protection, data controllers would be able to take such decisions without having to worry about the GDPR. However, that could undermine individuals' autonomy, which constitutes a fundamental value of EU data protection law[165]. In fact, the rationale for protection can be traced back to the explanatory memorandum of the equivalent provision under the Data Protection Directive (article 15), pointing to a concern that humans maintain the primary role in 'constituting' themselves instead of relying entirely on (possibly erroneous) mechanical determinations based on their "data shadow"[166]. To prevent that situation, EU data

[163] It is arguable however that relative factors such as the market power of the data controller and the vulnerability of the data subject could play a significant role in this determination, potentially sufficient to override the expectations created through the contractual agreement.
[164] See article 4, (4) GDPR.
[165] Paul Bernal, *Internet Privacy Rights: Rights to Protect Autonomy* (Cambridge University Press 2014)
[166] Explanatory text for Proposal for a Council Directive concerning the protection of individuals in relation to the processing of personal data, COM (90) 314 final – SYN 287, p. 29. See in this sense Isak Mendoza and Lee A Bygrave, 'The Right not to be Subject to Automated Decisions based on Profiling', in Tatiana-Eleni Synodinou, Philippe Jougleux, Christiana Markou, Thalia Prastitou (eds.), *EU Internet Law: Regulation and Enforcement* (Springer 2017).

protection law prohibits such decisions[167] except under limited circumstances, specifically if (a) they are based on the data subject's explicit consent; (b) they are necessary for entering into a contract or performance thereof, or (c) they are authorised by Union or Member State law to which the controller is subject and which also lays down suitable measures to safeguard the data subject's rights and freedoms and legitimate interests[168]. To complement that, the article specifies that "suitable measures" must be adopted also in the case of (a) and (c), including at a minimum the right of the data subject "to obtain human intervention on the part of the controller, to express his or her point of view and to contest the decision"[169].

Although one could view the right to contest a decision as logically implying the prior right to obtain an explanation for that decision, this additional right contemplated in Recital 71 of the Regulation was not eventually enshrined in article 22 (3), generating some discussion as to whether data controllers are in fact subject to an obligation to provide an explanation for their decisions falling into this category[170]. Regardless of the binding nature of this obligation in relation to an individual measure, it must be recognized that the transparency requirements detailing the information and access rights of data subjects (in articles 13-15 of the GDPR) do entail an explanation of the logic involved in any automated decision-making, the significance and the envisaged consequences of such processing for the data subject[171]. This means that EU data protection takes a clear stance on innovation involving decisions based on automated processing, requiring the individual to be adequately informed and put in the condition to meaningfully participate. Although the interpretation of the concepts of "solely automated" and "significantly impact" will constrain the application of this provision, the Article 29 Working Party has favored a broad understanding of the prohibition[172]. This limits to a large extent the scope of permissible innovation by requiring data controllers to trade off efficiency with explainability, contestability and human intervention, and thus potentially preventing several types of unsupervised machine learning techniques that are often put forward as examples of data-driven innovation.

4. Mapping the interactions: could the two policies be united in diversity?

As the previous sections have shown, competition and data protection law vastly differ on the space they assign within their rules to the pursuit of innovation. In particular, competition law is centered around the freedom to conduct business: while on the one hand it imposes general limits to that freedom by outlawing certain conducts, on the other hand it enables undertakings to overcome those limits through two main avenues. First, it identifies specific types of (economic) efficiencies that can be used to outweigh anticompetitive effects, imposing

[167] Article 22 (1) GDPR. There has been some controversy regarding whether the "right not to be subject to a decision based solely on automated processing" established under this article confer a right to object to any such decisions, or rather amounts to a prohibition for data controllers to engage in such decisions in the first place. However, the Article 29 Working Party has recently settled the debate in favor of the latter interpretation in its Guidelines on Automated individual decision-making and Profiling for the purposes of. Regulation 2016/679, WP 251, Revised and Adopted on 6 February 2018.
[168] Article 22 (2) GDPR.
[169] Article 22 (3) GDPR.
[170] See for instance Sandra Wachter, Bernt Mittelstadt, and Luciano Floridi, 'Why a right to explanation of automated decision-making does not exist in the General Data Protection Regulation', International Data Privacy Law, 7(2):76–99, 2017. Lilian Edwards and Michael Veale, 'Slave to the algorithm? Why a "right to an explanation" is probably not the remedy you are looking for', preprint, ssrn:2972855 (2017); Bygrave, supra note 166.
[171] Andrew Selbst and Julia Powles, 'Meaningful information and the right to explanation', 7 (4) International Data Privacy Law, 233, 2017; Gianclaudio Malgieri and Giovanni Commande', 'Why a Right to Legibility of Automated Decision-Making Exists in the General Data Protection Regulation', International Data Privacy Law, 7 (4) 243–265, 2017.
[172] A29WP, Guidelines WP251, supra note 167.

stringent conditions for such trade-offs to occur. Second, it recognizes the possibility for undertakings to adopt reasonable and proportionate measures to protect their own commercial interests, which may include the pursuit of non-economic goals. However, it is important to note that in the case of coordinated conduct, the 'objective justification' line of defence in the pursuit of non-economic objectives is only applicable if the concerned undertakings have been tasked by public authorities with that mandate.

In contrast, data protection law is based on the idea of requiring a justification for the processing of personal data, given their potential impact on the rights and freedoms of data subjects, and to that end imposes the fulfillment of specific conditions upfront. Aside from the option to escape those conditions by using effective anonymization techniques and the possible exemption from certain requirements in case of scientific research activity, data-driven innovation can be accommodated under two different notions: "legitimate interest", which implies no judgment on the type of interest pursued by the controller, so long as that interest is acceptable (i.e., legal) under the applicable law; and "compatible use" for further processing, which requires a link between the purposes for which the data have been collected and the purposes of the intended further processing. Both notions heavily depend on the context, including the nature of the data concerned, the potential impact on the data subject and the reasonable expectations of the data subject. In addition, it is important to bear in mind that data protection law does make a judgment call when it comes to innovations involving decisions based on automated processing which significantly impact individuals, prioritizing explainability, contestability and human intervention over efficiency. More generally, data protection requires any strive for efficiency to take a back seat to individual autonomy. This may limit some kind of innovation, but it permits and indeed promotes responsible and human-centric innovation in accordance with article 8 of the EU Charter.

Furthermore, even if both competition and data protection law rely on some form of balancing for the introduction of innovation, the inquiry has a substantially different focus: in competition law, the balancing test is based on a counterfactual of the competitive process, which refers to the general market conditions in the absence of the conduct. In data protection law, balancing revolves around the fulfillment of the reasonable expectations of the data subject, which depend on the individualistic benchmark of his or her relationship with the data controller. While the former test is not able to account for the serendipity that often drives innovation in the big data era, the latter does little to identify and address situations of abuse triggered by market concentration. There are also a number of additional shortcomings under the tests used by competition law to incorporate data-driven innovation (DDI) and data protection innovation (DPI), as explained in the text above and illustrated in Fig. 1 below.

	EFFICIENCY	**OBJECTIVE JUSTIFICATON**
101	**Permitted**: - Improvements in quality, productivity, and dynamic efficiencies. - Public policies framed in competitive terms.	**Permitted**: - Trade-off between interbrand and intrabrand competition; - Necessary and proportionate measures in pursuit of commercial self-interest.

		- Necessary and proportionate measures in pursuit of legitimate regulatory function.
	Obstacles: - DDI: Determinism. - DPI: quantifiability and measurability; "objective advantage" requirement for cross-market efficiencies (particularly where "advantage" implies the use of personal data for additional purposes). - Both: no elimination of competition.	**Obstacles**: - DDI: proportionality (indispensability). - DPI: "entrustment".
102	**Legitimate**: - Improvements in quality, productivity, and dynamic efficiencies. - Public policies framed in competitive terms.	**Legitimate**: - Reasonable and proportionate measure in pursuit of commercial self-interest (to improve price, quality, choice and innovation). - Reasonable and proportionate regulatory interest (provided no clash with competences defined by relevant regulations).
	Obstacles: - DDI: Determinism - DPI: quantifiability and measurability. - Both: no elimination of competition.	**Obstacles**: - DDI: proportionality (indispensability).

Fig. 1: Innovation Defences in Competition Law: Challenges for Data-Driven Innovation and Data Protection Innovation

This list of shortcomings highlights how difficult it can be to escape liability under competition law for what would generally be perceived as welfare-enhancing data practices, that are legitimate under data protection if carried out with the appropriate safeguards for data subjects. As corollary of this misalignment between competition defences and data innovation (in both of its manifestations), it is submitted that data innovation justifications may deserve some sort of special consideration, bringing to bear the weight attached by the European Union to the

protection of personal data. The notion of "competition on the merits", which emerged as a way to incorporate extra-competition rules into the concept of objective justifications, can in fact provide one trigger for such special consideration. Another mechanism could then be established for the assessment of data innovation as efficiency justification, in order as to overcome the problems of incommensurability and potentially neglect of privacy spillover. A specific form of cooperation could resolve these problems by building on the expertise of the data protection authority to assist the competition decision-maker, as well as take any further action deemed necessary for the pursuit of objectives that are squarely within its own mandate.

Accordingly, it is submitted that a special procedure could be defined for cases where a defendant to a competition proceeding raises a data innovation justification, enablign the authority with the relevant expertise to consider not only the merits of the claim, but also any further action that it deems necessary to prevent negative spillovers on data protection. The framework would need to account for different forms of cooperation between a competition authority (CA) and a data protection authority (DPA), depending on the needs arising from the situation in question. The following Table (Fig. 2) provides a diagram of the possible interactions of privacy (P) and competition (C), whereby "+" indicates a practice whose net effect is to increase the intensity of the value at stake (P or C), "Ø" indicates a practice whose net effect neither increases nor decreases that intensity, and "-" indicates a practice whose net effect is to decrease it.

	P+	**PØ**	**P-**
C+	C+, P+	C+, PØ	C+, P- *Cooperation need:* CA tipping DPA. Consider DP-friendly remedies?
CØ	CØ, P+	CØ, PØ	CØ, P- *Cooperation need:* DPA tipping CA. Request preliminary ruling from CA to DPA on whether DP is infringed.
C-	C -, P+ *Cooperation need*: CA to request DPA's assessment of DP-related defences	C -, PØ *Cooperation need*: DPA tipping CA. Consultation of CA for market definition and market power. Consultation for remedy.	C-, P- *Cooperation need*: Coordination at remedy stage

Fig. 2 : Interactions of Competition and Privacy

Four possible scenarios (those with a shade of gray in the backdrop) should in principle be immune from raising concerns for either a CA or a DPA, much less trigger a tension between

the two, and therefore do not call for coordination of their actions. The remaining five scenarios are more complex and raise different kinds of coordination problems, as discussed below.

C-, P+: This is a case where a practice is put in place that improves the privacy, yet affects negatively competition in the relevant market(s). One example is adblocking, a mechanism conceived to promote an ecosystem with less invasive ads and without behavioral tracking, but which can also be abused to deny market access and extract rents from websites and advertisers. Imagine a dominant browser vendor[173]committing not to serve any webpage which does not meet a self-proclaimed "Acceptable ads" policy, yet exempting from such policy the ads being served by the websites of its own and its affiliates[174]. The browser vendor could try to justify the exclusion of competitors by raising an efficiency defence, but this would require viewing the improved privacy as a quality that significantly affects competition for users' attention among homogeneous types of websites (i.e. newspapers, social networks, etc.). This is a hard route to follow, not only due to the measurement issues, but also (and most importantly) because it appears that, at the present time, users are generally driven by the content of pages, rather than the associated amount of ads and trackers[175]. The browser company could then claim that the policy constitutes a reasonable commercial step to protect the fundamental right to data protection of its own users, which is endangered by the widespread use of pre-formulated declarations of consent extracted from individuals through standardized Terms of Service. This defence would appear to be valid, to the extent that the ad blocker programme does not impose unreasonable or discriminate conditions for "whitelisting" (i.e., escape the application of the block). What is a competition authority to do in such cases? On the one hand, ignoring the potential benefit brought about by the programme would amount to disregarding the importance of the fundamental rights to privacy and data protection. On the other hand, acritically accepting the claimed efficiency would mean giving a free pass to undertakings using the public policy card, without adequate inquiry into the merits of such defence. For this reason, the most appropriate form of coordination would be to request the competent data protection authority to intervene and assess the legitimacy of innovation defences involving data protection, for example by examining the criteria and procedures established for "whitelising", to ensure they are not being used as a cover for exploitative or exclusionary practices.

C-, PØ: This is a case where the relevant practice is prejudicial to competition, but indifferent for data protection purposes. As explained in section 2.3, the case law has spoken clearly: competition law does not owe deference to other laws, unless those laws already effectively preclude the undertaking from distorting competition. Outside those limited circumstances, there is technically no limit to the ability of competition authorities to enjoin or even mandate a certain data practice on competition grounds; however, at the practical level the range of actions available to the competition authority should be constrained by the limits imposed by the Charter of Fundamental Rights, including not to unduly interfere with the rights to privacy and data protection of the data subjects involved. If, for example, the European Commission

[173] Currently, Chrome could be a good candidate for such position on mobile, where it reaches 40% (See https://www.netmarketshare.com/browser-market-share.aspx?qprid=2&qpcustomd=1).

[174] Such discriminatory behavior was recently found illegal in Germany under unfair competition law, irrespective of the fact that it had been put in place by a non-dominant and non-integrated player. Specifically, Adblocking service provider Adblock Plus engaged in discriminatory treatment *vis a vis* the biggest German publisher Axel Springer. See 'Adblock Plus' business model ruled illegal by German court' (Block Adblock, 26 June 2016) http://blockadblock.com/adblocking/germany-rules-adblock-plus-business-model-is-illegal/ accessed 15 September 2016.

[175] So far, companies branded as offering privacy-preserving services in the space for social networks (Ello) and search engines (DuckDuckGo) have not exerted significant pressure on their competitors.

were to order Google in the context of its *Google Search* investigation[176] to enable advertisers to use the data of their campaigns with third parties, this would increase the sharing of data concerning identifiable individuals with more parties – which may be problematic from a data protection perspective. In order to avow negative spillovers, it is thus particularly important to have a mechanism for consultation between public authorities before the implementation of any impactful data-related remedy. This ensures that competition remedies do not 'balance out' the essence of the right to data protection for the achievement of economic welfare gains.

At the same time, it is important for data protection authorities to appreciate the competitive implications of their decisions. This is even more delicate where the state of competition in the market contributes to determining the legality of a given practice under data protection law, for example the "significant imbalance" in determining the validity of consent[177] or the market position of the controller claiming the existence of a "legitimate interest" for the processing of specific personal data[178]. For this reason, it should be also possible for the DPA to consult with the relevant competition authority over the course of an investigation, at the very least in relation to market definition and the measurement of market power.

CØ, P-: This is the opposite scenario, where a given practice is detrimental to privacy, but indifferent from a competition standpoint. That is, firms are not competing on privacy, but intervention of the competition authority could improve the situation of data subjects. Clearly, there is a problem of mandate here, preventing the authority from conducting an investigation or imposing a remedy merely on the basis of data protection considerations[179]. At the same time, failing to give sufficient attention to data protection concerns would be inconsistent with the positive obligations imposed by article 51 of the Charter[180]. For this reason, it is necessary to ensure that the case-team at a competition authority investigating such type of cases can "tip" their colleagues at the data protection authority that they have discovered what they think might be a data protection issue, and transfer the case-file where warranted. On a similar basis, to the extent that lawfulness under data protection law can be considered to justify a particular data practice (for example, on ground of efficiency), competition authorities ought to be able to request a preliminary ruling to the relevant DPA to appropriately gauge the data protection considerations in competition analysis. The mechanism of preliminary ruling can be relatively informal (e.g., not necessarily detailed) but it needs to be under a 'fast-track' procedure, for otherwise the administration of this mechanism could hamper the effectiveness of competition enforcement.

C+, P-: Similar scenario to the one above, where a practice raises privacy concerns and has not only neutral, but even positive effects on competition. An example would be a doctor who decides to utilize the data of his patients, without appropriate consent, to create customized health insurance policies which he then offers to current and former patients. While this type

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[176] Case COMP/39470, see the documents available at <http://ec.europa.eu/competition/elojade/isef/case_details.cfm?proc_code=1_39740> accessed 15 September 2016.

[177] See supra note 135-136 and corresponding text.

[178] This assessment is relevant to determining the reasonable expectations of the data subject: see the Article 29 Working Party Opinion 04/14 referred to supra at note 162.

[179] The only possible theory to justify addressing data protection considerations under those circumstances would be that the company engaged in the practices in question is unfairly taking advantage of the cost saving arising from non-complying with data protection law, thereby putting competitors at disadvantage. It is just worth noting that under this approach competition law could be invoked in multiple cases in which an undertaking does not comply with other laws, for example environmental protection or anti-discrimination law.

[180] According to article 51, "The provisions of this Charter are addressed to the institutions and bodies of the Union with due regard for the principle of subsidiarity and to the Member States only when they are implementing Union law. They shall therefore respect the rights, observe the principles and *promote* the application thereof in accordance with their respective powers" (emphasis added).

of vertical integration may be efficient, it is also clear that competition authorities cannot simply condone breaches of data protection law for the sake of efficiency- and should thus be able to refer to a DPA any facts which they think raise concerns from a data protection perspective.

C-, P-: Finally, there is a situation where one or more data practices are found to be detrimental not only to data protection, but also to competition. This may occur where the conduct prescribed under the two laws align, and in particular in the two following scenarios. First, most obviously, where there is an overlap of the prohibited conduct in the two legal fields in question: for example, this may happen when both data protection law and competition law require portability[181]of data which constitutes an essential facility, or was being used to eliminate competition in a secondary market. Secondly, where committing a given data protection violation also confers a competitive advantage over other undertakings: this may be simply because it allows the firm to save compliance costs, but it may also be due to the advantages derived from data-driven innovation, for example by enabling the firm to combine data across different sources without the necessary opt-in. In this context, it is of utmost importance that any remedy imposed by the competition authority duly considers data protection, so as not to alter the balance of power between the affected data subjects and the data controller(s) in question. It thus calls for a mechanism of coordination between the two authorities at the remedy stage.

5. Conclusion

This chapter has discussed the role of innovation defences in EU competition analysis, critically reviewing the extent to which they are apt to accommodate the rising phenomenon of data innovation, which can be related to two different concepts: "data-driven innovation", where big data is used to improve production or distribution and better match customer preferences; and "data protection innovation", where market value is created through greater protection of data privacy. With regard to both concepts, it was concluded that competition law ought to be modernized by relaxing the stringency of the requirements for the success of those defences, in recognition of the intrinsic difficulties in predicting and quantifying efficiencies of this type. This is likely to be a major problem in the case of data-driven research, which effectively reverses the (deductive) process of scientific discovery by offering hypothesis on the basis of observation of empirical data. On the other hand, when it comes to data protection innovation, the main problem resides in the absence of benchmarks for the assessment of privacy benefits. In particular, the complexity of the analysis transcends the identification and quantification of unmet demand for greater data privacy; it also requires an explanation of the extent to which satisfying such demand outweighs any restriction of competition. In other words, competition law requires innovators to engage in a comparison of apples and oranges, and with particular stringency and exactitude when data innovation constitutes the proffered efficiency justification for coordinated behavior. The objective justification defense appears more likely to succeed for data innovation defenses, especially if raised in the context of unilateral conduct, but requires an examination of the merits of the extra-competition claims.

The need to consider the merits of data protection justifications in competition analysis prompted a second inquiry, relating to the formal mechanisms within EU data protection law to take into account of data-driven efficiencies. This inquiry resulted in the identification of four possible avenues, the first of which (anonymization) reduces the potential of data-driven

[181] According to newly established right to data portability, a data subject has under certain circumstances the right "to receive the personal data concerning him or her, which he or she has provided to a controller, in a structured, commonly used and machine-readable format and have the right to transmit those data to another controller without hindrance". See article 20 GDPR.

innovation, while the second (research purposes) depends on the ability to formalize one's activity as "research" and on the adoption of "adequate safeguards" for the rights and interests of data subjects. The two remaining avenues revolve around a multi-factor and context-dependent balancing exercise. It was recognized that this generates a differentiated regime of permission for data-driven innovation, and that co-regulatory mechanisms such as code of conducts and certification represent a valuable tool to enhance legal certainty for data controllers in that regard. Finally, it was noted that article 22 of the GDPR provides a backstop against innovations based on certain automated decisions that prioritize efficiency over explainability, contestability and human intervention. That limit and the different focus of the balancing exercise for the assessment of data-driven efficiencies fundamentally distinguish the nature of the innovation formally recognized in EU competition and data protection law. This suggests that the question of whether data protection considerations in competition analysis promote or hinder innovation is simplistic- it all depends on the notion of innovation that we look at. EU data protection law addresses different concerns than competition law; therefore, data protection considerations may on the one hand constrain the breadth of permissible innovation defenses in competition analysis, and on the other hand engender a different kind of innovation, that can be further stimulated through competition in the market.

Having ascertained these differences and reviewed the obstacles to data innovation defenses in competition analysis, the chapter suggested that a special procedure could be established for a coordinated assessment of data innovation defenses in competition law. It then moved on to consider the possible intersections between competition and data protection issues in competition enforcement, identifying a more comprehensive framework for cooperation. On the basis of the nature of the effects (positive, neutral and negative) of a given practice on competition and on privacy, a competition authority can expect to be confronted with data protection considerations in different ways. The mapping presented nine possible scenarios, five of which raise challenges of inter-institutional coordination.

Ultimately, the substantive suggestion provided by this chapter is one of creating a specific mechanism for inter-institutional cooperation for specific cases involving data innovation defenses[182], with a view to enabling competition and data protection agencies to strengthen – rather than undermine- each other's function. While the contours of this *ad hoc* procedure were sketched alongside the five complex types of interactions identified in this chapter, the framework could incorporate additional considerations to ensure steady and effective cooperation in more specific contingencies. Obviously, the details of the special procedure would need to be formalized in specific rules, including at a minimum a rule that establishes a legal basis for the exchange of information between the relevant authorities. The recent

[182] This specific type of cooperation should be distinguished from the more general collaboration taking place in the Digital Clearinghouse, a framework for periodic meetings between contact points of authorities responsible for the regulation of digital services focusing on the following activities: (1) discussing (but not allocating) the most appropriate legal regime for pursuing specific cases or complaints related to services online, especially for cross border cases where there is a possible violation of more than one legal framework, and identifying potential coordinated actions or awareness initiatives at European level which could stop or deter harmful practices; (2) using data protection and consumer protection standards to determine 'theories of harm' relevant to merger control cases and to cases of exploitative abuse as understood by competition law under Article 102 TFEU, with a view to developing guidance similar to what already exists for abusive exclusionary conduct; (3) discussing regulatory solutions for certain markets where personal data is a key input as an efficient alternative to legislation on digital markets which might stifle innovation; (4) assessing the impact on digital rights and interests of the individual of sanctions and remedies which are proposed to resolve specific cases; (5) generally identifying synergies and fostering cooperation between enforcement bodies and their mutual understanding of the applicable legal frameworks. See EDPS Opinion 8/2016 on coherent enforcement of fundamental rights in the age of big data of 23 September 2016, p. 15.

introduction of such rule in Germany through an amendment of the German Competition Act[183] is a welcome step towards effective and coherent enforcement of EU competition and data protection law, but other jurisdictions could define a more elaborated mechanism along the lines sketched above. In an era of big data and artificial intelligence, a regulatory framework failing to ensure coordination of competition and data protection enforcement runs contrary to the duty of EU institutions and Member States not only to respect and observe, but also to *promote* fundamental rights[184].

[183] At the time of writing, a bill was pending before the German parliament to amend article 50 of the German competition act ("Gesetz gegen Wettbewerbsbeschränkungen") by extending the ability of competition authorities to exchange information beyond consumer protection agencies, and specifically with the Federal Commissioner for Data Protection and Freedom of Information and the Data Protection Commissioners of the federal states. The German government proposed a specific norm, § 50c (1) (1), for the cooperation of competition agency and data protection agencies as part of the Ninth Comprehensive Amendment of the German Act against Restraints of Competition, available at http://www.bmwi.de/BMWi/Redaktion/PDF/E/entwurf-eines-neunten-gesetzes-zur-aenderung-des-gesetzes-gegen-wettbewerbsbeschraenkungen,property=pdf,bereich=bmwi2012,sprache=de,rwb=true.pdf. The norm, which entered into force in June 2017, provides that it is discretion of the authorities to exchange information that this is necessary for the performance of their respective functions, and use such information in their proceedings, as long as such information is not confidential (either as a business secret or because received by another authority for the application of article 101 or 102 TFEU). I am indebted to Rupprecht Podszun for bringing this amendment to my attention.

[184] See article 51 of the Charter, supra note 100. See also, distinguishing between negative and positive duties of competition authorities to respect and guarantee the effectiveness of data protection rights: Francisco Costa-Cabral and Orla Lynskey (2017) 54 *Common Market Law Review* 11, 44-46; Inge Graef, *Data Protection and Online Platforms: Data as Essential Facility* (Wouters Kluwer 2016).

Antitrust intent in an age of algorithmic nudging

Short abstract

This paper revisits the role of intent for the purposes of establishing an abuse of dominance under EU competition law. It does so reviewing cases where the outcome hinged on the existence of anticompetitive intent, and eliciting from that line of decisions a set of guiding principles. The consistency with those principles of the recent European Commission's Decision in *Google Shopping* is then discussed. After a critical examination of the definition of abusive conduct identified by the Commission (self-favoring) and the extent to which it satisfies the intent requirement in antitrust, the broader implications for providers of algorithmic intermediation services are explored. Given the absence of a materiality threshold and other limiting principles in the theory of harm used by the Commission, the risks of overreach and unpredictability are substantial.

Two recommendations are offered to ameliorate the *status quo*. First, courts and competition authorities should only take into account a defendant's subjective state of mind under a "qualified intent" test: a test requiring proof of immediate, substantial and foreseeable anticompetitive effects arising from a purported conduct. Second, to constrain the scope of application of the actionable duty of algorithmic self-scrutiny, regulators should introduce a negligence-based "safe harbor". This safe harbor, mimicking the specialized regime of intermediary liability for information society service providers, would enable continued investment and innovation in algorithmic services while also promoting adherence to cross-industry best practices in algorithmic design.

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1. Introduction: understanding the notion of intent in antitrust analysis

What value, if any, should a court or competition authority give to incriminating emails or documents indicating a defendant's anticompetitive intentions? The role of subjective intent in antitrust analysis remains a controversial topic, having been at the center of discussions by numerous commentators- especially in Europe and the United States[1]. Those in favor of a greater consideration of intent evidence argue that it constitutes an invaluable tool in the antitrust arsenal, allowing agencies and litigants to overcome situations where facts are ambiguous[2] or the evidence of harm to competition inconclusive[3]. A further argument, advanced especially by US commentators' is that with antitrust analysis increasingly relying on effects and facing challenges in proving harm to innovation, ruling out intent evidence is likely to generate a significant amount of false negatives[4].

On the other side of the fence sit those opposing a reliance on intent evidence, mainly for two reasons: first and foremost, "sales talks" to the company's employees encouraging to beat and indeed eliminate competitors are indicative of an aggressive business strategy, which may or may not be anticompetitive in the first place[5]. Second, banning any exhortation to compete aggressively would encourage firms to deploy more subtle forms of inducement, and thereby favor those who have the resources to master that complexification effectively: evidence documenting the state of mind of executives and managers is less likely to be found in the case of large or experienced firms. On that ground, intent evidence has been said to lack objectivity and reliability, as potentially both over-inclusive and under-inclusive[6].

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[1] See e.g. Frank Easterbrook, Monopolization: Past, Present and Future', 61 Antitrust Law Journal 99 (1992); Herbert Hovenkamp, 'The Monopolization Offense', 61 Ohio State Law Journal 1035 (2000); Ronald A. Cass and Keith N. Hylton, ' Antitrust Intent', 74 Southern California Law Review (2001), 657; Marina Lao, 'Reclaiming a Role for Intent Evidence in Monopolization Analysis', 54 American University Law Review (2004) 151; Geoffrey A. Manne and E. Marcellus Williamson, 'Hot Docs vs. Cold Economics: The Use and Misuse of Business Documents in Antitrust Enforcement and Adjudication', 47 Arizona Law Review 609 (2005); Antonio Bavasso, 'The Role of Intent under Article 82 EC: From "Flushing the Turkeys" to "Spotting Lionesses in Regent Park", European Competition Law Review 616 (2005); Maria João Melicias, 'The Use and Abuse of Intent Evidence in Antirust Analysis', 33 World Competition 569 (2010); Maurice E. Stucke, 'Is Intent Relevant?' Journal of Law, Economics and Policy 801 (2012); Colm O'Grady, 'The Role of Exclusionary Intent in the Enforcement of Article 102 TFEU'. World Competition 37, no. 4 (2014): 459–486; Pınar Akman, 'The Role of Intent in the EU Case Law on Abuse of Dominance', 39 European Law Review 316 (2014); Pinar Akman, 'The tests of illegality under Articles 101 and 102', 61 (1) The Antitrust Bulletin (2016), 84-104. Pier Luigi Parcu and Maria Luisa Stasi, 'The role of intent in the assessment of conduct under Article 102 TFEU', in Pier Luigi Parcu, Giorgio Monti and Marco Botta (eds.), *Abuse of Dominance in EU Competition Law* (Edward Elgar, 2017).

[2] See e.g. Stucke, supra n. 1, 852.

[3] See e.g. Lao, supra n. 1, 156.

[4] The extent to which this insight is applicable in the EU, which presents a different legal provision and a different enforcement model, is rather underexplored. While this paper is not aimed to address this question, the implications of the conclusions reached here about the proper use of intent in article 102 cases may be taken as useful departure point for that discussion.

[5] Putting it in Richard Posner's words: "it is the essence of the competitive process that all firms, including dominant ones, seek to prevail over their competitors on – and force them off – the market". See *Olympia Equip. Leasing Co. v. Western Union Tel. Co*., 797 F.2d 370, 373 (7th Cir. 1986). See also Judge Easterbrook's opinion in *A.A. Poultry Farms, Inc. v. Rose Acre Farms, Inc*., 881 F.2d 1396, 1401-03 (7th Cir. 1989).

[6] Using Posner's words once again: "In most situations eliminatory intent, notably, when inferred from documentary evidence, may lead to legal errors for its arbitrariness, that is, because it may be over-inclusive, since it may be too easy to find. Depending on the degree of legal sophistication of the concerned undertakings it may also be under-inclusive, since it can be too easy to hide". Richard Posner, *Antitrust Law*, 2014 (Chicago Press 2001).

This criticism is well taken, in a world where the requisite culpability can be grounded on *any* evidence documenting the defendant's state of mind when undertaking a certain act. In that world, subjective intent can be a slippery slope, as it might lead a court or competition authority to believe that the defendant engaged in anticompetitive conduct even where the anticompetitive outcome was in fact either impossible or highly unlikely to materialize given the circumstances[7]. However, it is submitted that this is not the world in which EU antitrust enforcement operates[8]: a close reading of some of the case-law of the European Court of Justice (CJEU) suggests that the notion of subjective intent can only be validly relied upon where, on net balance with the whole body of evidence, there is sufficient likelihood for the defendant's projected conduct to lead to anticompetitive effects. In other words, that notion must be integrated with an objective component, which relates to the closeness of the connection between the subjective state and the anticompetitive outcome. This resonates with the well-settled principle that "abuse of dominance is an *objective concept* relating to the behavior of a dominant undertaking which is such as to influence the structure of a market where, as a result of the very presence of that undertaking, the degree of competition is weakened and which, through recourse to methods different from those which condition normal competition, has the *effect* of hindering the maintenance of the degree of remaining competition or the growth of that competition" [9].

To fully appreciate this point, a clarification is needed to distinguish between the subjective type of intent (i.e., evidence of a defendant's state of mind) that we discussed so far, and the objective intent to engage in anticompetitive conduct: specifically, it is important to bear in mind the latter indicates the intent attributed to a dominant firm *by way of inference* from a business decisions it made. Much of the caselaw is confusing in this regard, as it fails properly differentiate between these two notions in referring almost invariably to "intent" or "intention", "objective", "strategy" and "purpose" or "aim". However, that difference is crucial in determining how culpability is established: while in both cases there may be an inference process at some level of abstraction, objective intent is a legal construct which prescinds from the existence of any form of volitional expression altogether, focusing on the *presumed* state of mind of a reasonable person (rather than the defendant specifically) in committing a particular act or omission. It is obtained through an inductive process which is typically based on an ideal notion of *homo economicus*[10], as illustrated by widely deployed unilateral conduct tests such as the "no-economic sense" test, the profit-sacrifice test and the as-efficient competitor test[11].

Note that objective intent is fundamentally different from so called "indirect" or "oblique" intent (also known as "*dolus indirectus*"), which is when a person not only intends a particular consequence of their act, but also an additional consequence which is virtually certain

[7] Say, for instance, finding relevant a clear intent to engage in predatory pricing to undercut competitor A when the predator is unaware of the existence of a more efficient competitor B, who will outlive predation and gain market share to the expense of both the predator and competitor A. Or a selective price cut directed at the wrong target.

[8] This can be contrasted with the legal framework under US law, where conduct can fall foul of antitrust roles even in inchoate form (as conspiracy or attempt to monopolize).

[9] Case 85/76 *Hoffmann-La Roche & Co AG v. EC Commission*, ECR 461(1979), para. 91 (emphasis added).

[10] This is generally the case for competition law; however, the broader reference is one of an analogy between ourselves and others on the basis of experience, which has been called "homo psychologicus". See Jeoren Blomsma, *Mens rea and defences in criminal law* (Intersentia 2012), 57.

[11] See in this regard Unilateral Conduct Working Group, 'Objectives and Principles of Unilateral Conduct Laws', International Competition Network (2012), at http://www.internationalcompetitionnetwork.org/uploads/library/doc827.pdf; see also Erik Osterud, *Identifying Exclusionary Abuses by Dominant Undertakings under EU Competition Law: the Spectrum of Tests* (Kluwer Law 2010).

following that act[12]; and it differs significantly from the so called "intention on possibility" (or "*dolus eventualis*") which means appreciating and accepting the considerable chance that a certain consequence may materialize. As a practical matter, however, objective intent will often overlap with *dolus indirectus* or *dolus eventualis*; this is particularly the case when the accepted consequence reasonably follows from economic logic. However, the key difference is that in one case the inquiry is subjective (into the mind of the person in question), while in the other it is purely objective (into the mind of a reasonable person). For convenience, I will distinguish between "intent" as the general subjective element denoting culpability for an offense (known in common law systems as "*mens rea*"), and "intention" as the more specific type of culpability which is attributed following an inquiry into a defendant's mind[13]: thus, the subjective/objective nature of the inquiry marks a key difference between subjective intent (hereinafter also referred to as "intention") and objective intent (which is generally known as "negligence"[14]).

This paper is structured as follows: section 2 reviews the relevant cases in EU competition law and thereby illustrates the difference and interplay between different types of intent, and the closely related distinction between subjective and objective evidence. In section 3, attention is placed on the recent Commission decision in *Google Shopping*, to examine the role played by subjective and objective intent in the Commission's assessment, and attempting to reconcile the decision with previous case-law. Section 4 offers a possible solution to safeguard against overstretching of the role of intent, with particular regard for situations in which undertakings may assume liability for their own algorithmic design choices. Finally, section 5 briefly summarizes and concludes.

2. Exploring the role of intent in art 102 TFEU

2.1 Constitutive element?

Construing the place for intent in article 102 TFEU from the existing law is far from a straightforward. For starters, the textual basis contains no explicit reference to any subjective element in article 102 TFEU. The article literally refers to *any* abuse "by one or more undertakings of a dominant position within the internal market or in a substantial part of it shall be prohibited as incompatible with the internal market in so far as it may affect trade between Member States". While intent could technically still be read into the word "abuse", that interpretation clashes with the common interpretation of the CJEU's oft-cited *obiter dictum* in *Hoffman La Roche* that abuse is an "objective concept", which is that subjective state of mind is not a requisite for the establishment of an abuse. However, for purposes of the present discussion, it is interesting to note that the statement made by the Court in that case did not deal with subjective intent: rather, the Court was concerned with distinguishing between the *active or passive* nature of the undertaking's conduct, rejecting the centrality (but not the relevance altogether) of such nature in the establishment of an abuse. More specifically, the famous quote about the *objective* nature was made in the context of rejecting the defendant's interpretation that an abuse according to article 102 TFEU implies that "the use of the economic

[12] *R v Woollin* [1999] 1 A.C. 82; [1998] 3 W.L.R. 382; [1998] 4 All E.R. 103

[13] See in this sense the work of Anthony Duff, summarized by John Gardner and Heike Jung, 'Making Sense of *Mens Rea*: Antony Duff's Account" 11 (4) Oxford Journal of Legal Studies (1991) 559-588.

[14] Despite the characterization of negligence as a type of liability, for instance, the German system sees it as a type of intent, although with an objective element (*Tatbestandt*). See Michael Bohlander, *Principles of German Criminal Law* (Hart Publishing 2008), pp. 59-60.

power bestowed by a dominant position is the means whereby the abuse has been brought about"[15].[16], rather than with the dominant firm's *intention* to exclude rivals or harm consumers.

Of course, this does not mean that objectivity *cannot* be interpreted to exclude the consideration of *certain* elements relating to the subjective state of mind of the defendant[17], at least as a constitutive element of the abuse. But that is a step further, which was not made in *Hoffman Laroche*. The implications of objectivity on the relevance of a defendant's state of mind were somewhat better explained in *Continental Can*, where the Court held that "abuse" does not imply the existence of fault in the sense of a failure in propriety or morality: in other words, negligence suffices[18]. However the example provided by the Court in that instance, referring to the takeover that it had deemed abusive, was focused not on the intention of the acquirer, but rather on the fairness of the price paid to the acquiree's shareholders: fairness was not a relevant consideration -the Court explained- as the real problem was that Continental Can had through the takeover practically eliminated competition which existed, or at least was possible, on the concerned products. Hence, the take-away from that ruling was that there is no need to prove an intention to harm competition, *if* that harm is indeed the practical result of the conduct.

One should not take this concept too far, however. A broad interpretation of the holding in *Continental Can* that "*intent* to harm competition" is unnecessary for the establishment of a violation under article 102, If applied in connection with the imposition of a fine, would raise serious due process concerns. To be sure, article 23 (2) of Regulation 1/2003 clearly indicates the need to establish intention or negligence in order to impose a fine on an undertaking. This point is particularly important considering the recognition by the European Court of Human Rights that competition fines are criminal in nature (despite their qualification as "administrative" under EU law), and therefore trigger the application of the guarantees set out by article 6 ECHR in relation to the right to be heard, including the presumption of innocence (enshrined also in article 48 of the EU Charter of Fundamental Rights)[19]. The Court has also explicitly recognized the application of the principle of legality reflected in article 7 ECHR (also known as "*nullum crimen, nulla poena sin lege"*) in competition cases, affirming that where EU legislation imposes or permits the imposition of penalties, it must be clear and precise so that the persons concerned may know without ambiguity what rights and obligations flow from it and may take steps accordingly[20]. This implies that both knowledge (actual or constructive) and control over one's anticompetitive conduct must be established, before a fine can be imposed.

Yet it is arguable that the role of intent in article 102 cases goes beyond the (admittedly broad) set of cases in which a penalty is imposed: the mere establishment of a violation presupposes some form of intent- if not subjective, an objective notion. Despite the absence of any explicit reference to it in the treaty and in the cases mentioned so far, a general intent to commit an act can be evinced from the definition of abuse given in *Hoffman La Roche*, referring to "*recourse* to methods different from those which condition normal competition"[21]. A literal interpretation

[15] *Hoffman La Roche*, supra note 9, paras. 90- 91

[16] A close reading of paragraph 91 seems to suggest that the free will of consumers in a particular transaction could be trumped by the ability of the dominant firm to influence the structure of the market in a way that constrains consumers more generally.

[17] Or, as illustrated in *France Telecom* (*infra*, section 2.2.), of factors that are inherently subjective.

[18] Case 6-72, *Europemballage Corporation and Continental Can Company Inc. v Commission of the European Communities*, ECLI:EU:C:1973:22.

[19] *A. Menarini Diagnostics S.R.L. v. Italy, no. 43509/08, 27 September 2011,* para. 42.

[20] Joined Cases C-189/02 P, C-202/02 P, C-205/02 P to C-208/02 P and C-213/02 P *Dansk Rørindustri and Others* v *Commission* [2005] ECR I-5425, paras. 215-223.

[21] According to the Oxford dictionary, "recourse to" refers to the "the use of someone or something as a source of help in a difficult situation". The version in the original language (German) uses "durche die Verwendung",

of this term suggests that it would be incorrect to conclude that a dominant undertaking is liable for conduct which is merely accidental and does not result from a breach of the undertaking's duty of care. For instance, an undertaking should not be liable for the anticompetitive act of one of its employees if it can prove that the event was a result of a clerical mistake, or the malfunctioning of a computer system, that it could not have reasonably prevented or remedied. Put it another way, intent cannot be imputed for an event that is an unlikely consequence of an act, and which would have been unreasonable for an undertaking to consider; in such cases, neither subjective nor objective intent could be established. It is in this sense that the Court's reference in *Continental Can* to "practical result" to harm competition should be interpreted: no proof of intention to harm competition is needed, when that result is a *likely and foreseeable* consequence which could have practically been addressed by the undertaking.

This reading is consistent with the evolution of corporate criminal liability, which has in recent years overcome the enforcement gaps intrinsic in the theories of "identification" (holding that a firm's intent corresponds to that of its managers) and "collective knowledge" (holding that a firm's knowledge is the sum of the knowledge of its employees) by embracing an organizational model of culpability, i.e. establishing fault for failure to adopt adequate organizational measures to prevent the effects giving rise to the illegality[22]. The Court has explicitly moved in that direction in EU competition law when it comes to the liability of an undertaking for the conduct of an independent contractor: first, it has long recognized that, where anticompetitive conduct is attributable to a person authorized to act on behalf of the undertaking, it is not necessary for there to have been action by, or even knowledge on the part of, the partners or principal managers of the undertaking concerned[23]. Secondly, in the specific context of actions by independent contractors infringing article 101, the Court has ruled that liability may attach not only when the service provider was in fact acting under the direction or control of the undertaking concerned, but also when the undertaking was aware of the anti-competitive objectives pursued by its competitors and the service provider and intended to contribute to them by its own conduct. Or alternatively, with even broader scope of application, where the undertaking could reasonably have foreseen the anti-competitive acts of its competitors and the service provider and was prepared to accept the risk which they entailed[24]. While the Court has not had the opportunity to rule on the applicability of this organizational model in the context of article 102, it has more generally held that the condition of existence of intention or negligence is satisfied if the undertaking concerned "cannot be unaware of the anti-competitive nature of its conduct, whether or not it is aware that it is infringing the competition rules"[25]. From that, it is reasonable to assume that organizational measures will be even more important in unilateral conduct context: as there is no need to predict competitors' actions in order to determine one's own conduct, a solid set of organizational measures (including for example a compliance programme) should be sufficient for a dominant undertaking to escape liability.

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which can be translated with the less purposive phrasing of "through the utilization", or simply "by using". Whatever version is picked however, the concept indicates a preordinate act to utilize certain methods of competition: not necessarily in the sense that it forms part of a competitive strategy, but at least meaning that it was not carried out under duress or by mistake, which distort the defendant's real intention.

[22] Cristina de Maglie, 'Models of Corporate Criminal Liability in Comparative Law' 4 (3) Washington University Global Studies Law Review (2005).

[23] Joined cases 100/80 to 103/80, *Musique Diffusion française and Others v Commission* EU:C:1983:158, para. 97.

[24] C-542/14, *SIA 'VM Remonts'(formerly SIA 'DIV un KO') and Others v Konkurences padomem* ECLI:EU:C:2016:578, para. 33.

[25] C-280/08 P, *Deutsche Telekom v Commission* EU:C:2010:603, para 124; C-295/12 P, *Telefonica v Commission* EU:C:2014:2062, para 156.

Another corollary of the dependence of an abuse on an intent-based notion of "recourse to methods different from those which condition normal competition" is that it should not be an abuse for a dominant company to engage in conduct that is in line with methods applied in conditions of "normal competition": that is, normal competition is a defense even where such company carries out the conduct with the (professed or implicit) intention to drive its competitors out of the market. This is because in order to be successful a plaintiff would need to show a causal link between an act or omission by the undertaking and a (possible) anticompetitive effect, which is presumed to be lacking in case of methods of operation conforming to that abstract notion of "normal competition"[26]. It goes without saying that such defense does not offer real prospects of success until the EU adjudicature provides an affirmative indication of the boundaries to "normal competition" or "competition on the merits", but that discussion goes beyond the scope of this contribution[27].

2.2. A typology of intent usage: disambiguation v. corroboration

So far we have only seen early judgments addressing intent negatively, i.e. to (explicitly or implicitly) negate the relevance of intent; however, more recent cases identify two possible roles of intent as relevant consideration for the establishment of a violation of article 102 TFEU: *AKZO*[28] laid out the distinction rather clearly. Confronted with the need to distinguish between legitimate and anticompetitive below-cost pricing of the products (vitamins) sold by AKZO to the customers of a competitor (ECS), the Court accepted the Commission's distinction between two different scenarios: one in which the exclusionary consequences of a price-cutting campaign by a dominant producer are so self-evident that no evidence of intention to eliminate a competitor is necessary; and another where the low pricing could be susceptible of several explanations, which may render it necessary to prove the existence of an intention to eliminate a competitor or restrict competition. In the latter cases, intent (be it subjective or objective) serves to separate the wheat from the chaff, i.e. to clarify the purpose of a conduct that displays ambiguous welfare effects. In the former hypothesis, proving intent is not *necessary*, although it may be useful additional evidence to support the establishment of a violation.

The Court then famously operationalized those principles by setting up a presumption of predation for prices below average total costs, by requiring proof of a plan to eliminate a competitor for cases where prices are between average variable costs and average total costs. It then sought to prove the existence of an intention to eliminate ECS by pointing to an internal document prepared by one of AKZO's representatives showing that prices offered to one specific customer (Allied Mills) in January 1981 were established by calculating that they were "well below" those charged to it by ECS. To the eyes of the Court, this showed that AKZO's intention was not solely to win the order, as otherwise it would have simply reduced its prices to the (lesser) extent necessary for that purpose, and not by such greater margin. Furthermore, that was to be seen in the context of prior meetings between AKZO and ECS where AKZO threatened to sell flour additives below its production costs if ECS continued to sell benzoyl peroxide, which led to ECS applying for an injunction before the London High Court to prohibit AKZO from implementing the threats. In that light, the Court considered that by quoting to Allied Mills prices that were calculated on the basis of those offered by ECS to a similar customer, AKZO revealed an *aim* to set its prices at the lowest level possible without infringing the commitment made to the London High Court (that is, well below ECS's costs

[26] Note that this is quite apart from the need to show a direct link of causality between a dominant position and an alleged abuse (for example, implying that the abuse must occur in the same market where dominance exists), which was explicitly rejected both in *Continental Can* and in *Hoffman La Roche.*

[27] Along these lines, see Akman, 'The illegality tests' supra n. 1.

[28] Case C-62/86, *Akzo Chemie BV v Commission* ECLI:EU:C:1991:286.

but above AKZO's average total costs)[29]. In other words, documentary evidence was indicative of a subjective intent not simply to maximize profits, but actually (given AKZO's likely awareness of the consequences of their price-cutting[30]) to eliminate competitor ECS from the market.

A similar situation presented itself in *Tetra Pak II*[31], another case concerning predation where the Commission sought to prove what it called "eliminatory intent" to corroborate the finding that prices below average total costs amounted to predation. Here, the Court of First Instance (CFI) placed importance on the magnitude of the differences of prices of Tetra Rex cartons in Italy compared to other Member States (20 to 50%), which gave rise to a presumption of the existence of a predatory plan. Furthermore, the Court found that presumption consistent with the content of the reports of Tetra Pak Italiana's board of directors of 1979 and 1980, which referred to the need to make major financial sacrifices in the area of prices and supply terms in order to fight competition (in particular, from the target of the predation in question –Pure Pak)[32]. This case thus stands as an illustration of the fact that subjective and objective intent may be used in parallel, reinforcing each other's value. Obviously, the theoretical danger with parallel application is that of improper conflation: it would be problematic if antitrust analysis extrapolated an intent to eliminate competition from an utterance by a company's manager or even a non-qualified employee, if the evidence clearly suggests that the company's conduct is justified or even pro-competitive[33]. This risk of confusion should in principle be minimized by the duty of the EU institutions to look at the evidence as a whole[34] and sustain only a finding of illegality based on a firm, precise and consistent body of evidence[35]; nevertheless, the mere existence of this risk highlights the opportunity of rationalization of key principles.

Another judgment that discussed intent as a criterion of disambiguation with precompetitive conduct was the CFI's *Compagnie Maritime Belge*[36]. This case concerned a joint dominant position by Compagnie Maritime Belge and other members of a liner conference who had put in place a series of practices of selective price-cutting (known as "fighting ships") deemed by the Commission to be indicative of a plan to eliminate a particular competitor (G&C). In the words of the CJEU, this is because where a liner conference in a dominant position selectively cuts its prices in order deliberately to match those of a competitor, it derives the dual benefit of eliminating a competitor in the liner shipping market and continue to charge high prices for the services not threatened by competition[37]. Interestingly, despite the absence of specific legal recognition for the abuse in question (it was not a predatory pricing case), the Commission considered it necessary to show the existence of anticompetitive intent. It did not simply rely on objective intent established from evidence of a price-matching pattern, but also found in internal documents references to "getting rid" of the independent shipping operation and the use of the term "fighting ships" which was allegedly understood in the industry as indicating that particular kind of practice. On appeal to the Commission's decision, the CFI approved the

[29] *Id.,* para. 102.
[30] Note that this likely awareness, based on general experience, does not turn the intent in question from subjective into objective: it concerns knowledge and acceptance of the consequence of an intended action, rather than the presumed intention (negligence) in connection with a conduct displayed in the market.
[31] Case T-83/91, *Tetra Pak v Commission* [1994] ECR II-00755.
[32] *Id.*, para. 151.
[33] Manne, supra n. 1, 652-654.
[34] Case C-637/13 P, *Laufen Austria AG v European Commission* ECLI:EU:C:2017:51, para. 68.
[35] Joined cases C-89/85, C-104/85, C-114/85, C-116/85, C-117/85, C-125/85, C-126/85, C-127/85, C-128/85 and C-129/85, *A. Ahlström Osakeyhtiö and others v Commission* [1993] ECR I-01307, para. 127.
[36] Cases T-24/93 to T-26/93 and T-28/93 *Compagnie Maritime Belge Transports and Others v Commission* [1996] ECR II-1201.
[37] C-395/96 P and 396/96 P, *Compagnie Maritime Belge Transport and Others v Commission* [ECR] I-1365, para. 117.

evidence on all counts, and rejected the relevance of the data presented by the defendant that G&C's market share had actually increased during the period of the alleged practice. It argued that "where one or more undertakings in a dominant position actually implement a practice whose aim is to remove a competitor, the fact that the result sought is not achieved is not enough to avoid the practice being characterized as an abuse"[38]. The Court did not provide any circumstantiation to that statement, which is unfortunate given the risk of it becoming a slippery slope for the use of intent. Even if we were to accept the concept of an abuse "by object", it remains crucial to ensure that, much like in the case of article 101, such category identifies a specific set of practices whose harmful nature is proven and easily identifiable in the light of experience and economics[39]. Regrettably, this sweeping characterization of "by object" abuse was not rectified as the CJEU upheld the judgment in its substantive part[40].

France Telecom[41] is perhaps the most controversial judgment in this area, and the one with the most confusing use of the word "intent". Once again, it was a case of predation in circumstances in which it was necessary to prove an overall plan to eliminate the competitor (objective intent), as a second step of the test set out in *AKZO*. The claim by France Telecom on appeal before the CJEU was that the CFI had only relied on *subjective* factors to deem the anticompetitive plan proven; and this would be contrary to the requirements of the case-law to use *objective* indications, such as threats to competitors or selective price cuts in respect of competitors' customers. In other words, France Telecom evoked the application of the factors used in *AKZO* and *Tetra Pak* as a manifestation of the requirement of proving intent through objective means, and the Commission disputed that theory. The Court quickly dismissed the claim, but accepted France Telecom's reading of the case-law to the effect that an anticompetitive plan must be proven on the basis of "objective factors"[42]. In principle, one could take this to confirm the necessity of combining a subjective and an objective component in proving intent. However, the Court referred to the undertaking's internal documents as an example of objective factor from which eliminatory intent can be deduced, despite the disputed meaning of the words contained in the document[43]. This suggests that there might be a difference between *direct* evidence[44], which proves the incriminated conduct without need for further evidence or inferences; and evidence that is *objective* (or based on objective factors), which admits the use of reasonable inferences on the basis of rules of general experience[45]. It should also be noted that in approving the requirement to use "objective factors" and failing to address the Commission's argument that the element of *intention* in abuse of dominant position is "necessarily subjective"[46], the judgment left some confusion as to the relationship between subjective factors and subjective intent.

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[38] *Compagnie Maritime Belge*, supra n. 36, para. 149. See also a similar statement made by the General Court in Case T-230/01, *Manufacture Francaise des Pneumatiques Michelin v Commission* [2003] ECR II-4071, para. 241; and in T-228/97, *Irish Sugar plc v Commission* [1999] ECR II-2969, para. 270.

[39] See Opinion of Advocate General Wahl in Case C-67/13 P, *Groupement des cartes bancaires (CB) v European Commission* ECLI:EU:C:2014:1958, para. 56.

[40] Joined cases C-395 to 396/96, *Compagnie maritime belge transports and Others v Commission of the European Communities* [2000] ECR I-01365.

[41] C-202/07 P, *France Télécom SA v Commission of the European Communities* [2009] ECR I-02369.

[42] *Id.,* para. 97.

[43] *Id.,* para. 98.

[44] According to authoritative sources, the General Court tends to use the expression 'direct evidence' when it refers to contemporaneous notes which clearly demonstrate the fact in question, but the use of this term in evidence literature is broader. See Fernando Castillo De La Torre and Eric Gippini Fournier, *Evidence, Proof and Judicial Review in Competition Law* (Edward Elgar 2017), 163; cf. Andrew Choo, *Evidence* (5th ed., Oxford University press 2018).

[45] See Opinion of AG Kokott on 19 February 2009, Case C-8/08, *T-Mobile Netherlands and Others* [2009] ECR I-4529.

[46] *Id.,* para. 96.

An examination of the CFI judgment reveals that the root of confusion was the interpretation of the concept of "*pre-emption* of the ADSL market" found in France Telecom's internal document. The Court treated the verb as indicative of a plan to predate when considering it in combination with additional evidence, namely France Telecom's internal documents indicating knowledge that (1) its non-profitable pricing combined with high sales volumes was not economically sustainable for competitors[47]; (2) the impossibility of matching retail prices while also staying profitable prevented AOL's entry on the high-speed market[48]; and (3) France Telecom enjoyed specific advantages as market leader"[49].
The judgment gives short drift to defendant's allegation that the documents concerned would merely contain "spontaneous, informal, even unconsidered words" that reflected the dialectic of the internal decision-making process[50]. One remains wondering whether those types of allegations would be sufficient, if accepted, to cast doubt on the objectivity of the evidence produced. Unfortunately, those nuances were not picked up in the final ruling by the CJEU, which simply defined the undertaking's internal documents as "objective factors". In doing so, the Court failed to trace the dividing line between subjective and objective evidence.
It is also worth noting that the reason why the judgment places emphasis on subjective intent, without a correlative enquiry as to the existence of an objective component, is that it had already been established that the defendant's pricing was below average total costs. This is a particular situation that under EU competition law triggers a purpose -rather than effect- inquiry[51]. It is a narrow situation of purpose-based abuse which, unlike the one identified in *Compagnie Maritime Belge*, is based on a clearly defined set of circumstances rendering harm to competition sufficiently likely. In other words, this is a specific area where the law has formally (and dispositively) recognized the disambiguating role of intent evidence.

2.3. Link to special responsibility

The final piece of the puzzle with regard to the role of intent in the case-law on article 102 TFEU is the General Court's judgment in *Astra Zeneca*[52]. This judgment markedly differs from previous case for the type of reasoning followed to establish anticompetitive intent, which was linked to the defendant's failure to meet the expectations of fairness and transparency placed on a dominant firm (in particular, in dealing with regulatory authorities). The conduct at issue was the provision of misleading information by Astra Zeneca to regulatory authorities for the issuing of Supplementary Protection Certificates to which it was in fact not entitled, or was only entitled for a limited period. The Commission found that Astra Zeneca had abused its dominant position in various national markets for prescribed proton pump inhibitors by making deliberate misrepresentations to patent attorneys, national courts and patent offices in order to obtain the supplementary protection certificates for its medicine (omeprazole). Astra Zeneca on its part contended that there was no bad faith in those misrepresentations, which concerned the date of authorization of its medicine, as it legitimately relied on the theory of "effective marketing authorization" date (relating to the regulatory approval of the prices for sale on the market) instead of referring to the date of the technical authorization of the medicine. Yet the main legal argument was that the Commission must rely on objective factors in the definition of intent, arguing that the Court's case-law indicates that abuse is an objective concept which

[47] Case T- 340/03, *France Telecom v Commission* [2007] ECR II-00107, para. 210.
[48] *Id.*, para. 212.
[49] *Id.*, para. 213.
[50] *Id.*, para. 201.
[51] In the words of the Court: "[…] although the fact that an undertaking is in a dominant position cannot deprive it of the right to protect its own commercial interests if they are attacked and such an undertaking must be allowed the right to take such reasonable steps as it deems appropriate to protect those interests, it is not possible, however, to countenance such behaviour if its actual purpose is to strengthen that dominant position and abuse it". Case C-202/07 P, *France Télécom,* supra n. 41, para. 46.
[52] Case T-321/05, *AstraZeneca AB and AstraZeneca plc v European Commission* [2010] ECR II-02805.

does not depend upon subjective intention to cause harm to competition or evidence of conduct preparatory to an abuse, but upon an objective ascertainment of conduct which is in fact capable of restricting competition within the meaning of Article 102[53]. In contrast, it alleged that the Commission's case rested upon a series of insufficiently founded allegations, selective references to documentary evidence, tenuous inferences and insinuations which do not amount, even taken together, to clear and convincing proof[54] (for instance, the use of different date for its applications for a Supplementary Protection Certificate in different Member States[55]).

The Court did not reject Astra Zeneca's interpretation of objectivity, reiterating that proof of the deliberate nature of the conduct and of the bad faith of the undertaking in a dominant position is not required for the purposes of identifying an abuse of a dominant position[56]. However, it also pointed out that this does not lead to the conclusion that intention to resort to practices falling outside the scope of competition on the merits is in all events irrelevant[57]. In accepting that the qualification of a given conduct as abusive (in this case the misleading nature of representations made to public authorities) must be assessed on the basis of objective factors[58], it stressed that legality of the defendant's conduct depended on whether, in the light of the context in which the practice in question has been implemented, that practice was such as to lead the public authorities wrongly to create regulatory obstacles to competition[59]. Note that this confirms the interpretation that has been advanced so far, that subjective intent (here, intention to mislead) is only relevant to the extent that the agent is likely to achieve the desired outcome.

The Court then solved the dispute by reaching for the concept of special responsibility not to impair genuine undistorted competition: manifest lack of transparency over factors that were material for the regulatory assessment constituted a breach of that responsibility, in particular with regard to Astra Zeneca's failure to disclose all the relevant dates for the purposes of issuing the certificates, as well as its interpretation justifying reference to the "effective marketing" authorization instead of the technical authorization[60]. Despite a lively discussion between parties as to whether such conduct can be punished under a negligence standard or requires a specific intention to commit fraud, the Court did not address that question squarely. However, it clearly evoked the concept of negligence based on duty of care when it referred to the dominant undertaking's duty to "at the very least inform the public authorities of any error in its communications with them" as a consequence of the undertaking's "special responsibility not to impair, by methods falling outside the scope of competition on the merits, genuine undistorted competition in the common market"[61].

This ruling constitutes an important brick in the edifice of intent in article 102 cases for illustrating that the concept of special responsibility triggers a general duty of care, upon which objective intent can be inferred. In taking this approach, the judgment dispenses with the need to determine whether the evidence adduced by the Commission to prove subjective intent was based on sufficiently "objective factors", and leaves once again to posterity (after *France Telecom*) the question as to how "subjective" and "objective" ought to be distinguished. While the defendant seemingly provided good examples of "subjective" factors when pointing to the

[53] *Id.*, para. 309 and 318.
[54] *Id.*, para. 384.
[55] *Id.,* paras. 488, 490 and 493.
[56] *Id.*, para. 356.
[57] *Id.*, para. 359.
[58] *Id.*, para. 356.
[59] *Id.*, para. 357.
[60] *Id.*, para. 496.
[61] *Id*., para. 358.

use of "selective and out of context references, tenuous inferences and insinuations", it remains to be seen whether the CJEU would second that view (as on the appeal it did not rule on this particular point).

2.4 Intent in the Guidance Paper

Having illustrated so far that the case-law of the CJEU requires the existence of an objective element as constitutive part of subjective intent, it is worth noting that the European Commission's Guidance Paper[62] contains no acknowledgment in this sense. This has notable consequences on future enforcement, in that the Commission as well as any court or competition authority relying on the Paper should handle its guidelines with caution. Those guidelines specifically say that "intent can be proven by *direct* evidence of a strategy to exclude competitors, such as a detailed plan to engage in certain conduct in order to exclude a competitor, to prevent entry or to pre-empt the emergence of a market, or other evidence of concrete threats of exclusionary action"[63]. Note that this formulation incorporates the wording that had been subject to controversy in *France Telecom*, so that there will be no questions for the Commission that "pre-empting" belongs to the category of acts directly prohibited by article 102 (and thus no inference is needed once it is proven to be the conduct to which a subjective intent can be attributed).

Two additional points can be made in that regard: on the one hand, the Commission's focus on direct evidence appears to limit its ability to make inferences about intention, which reduces the risk of stretching this notion too far[64]. The importance of this change remains limited, however, in the absence of a clarification on the distinction between direct and indirect evidence. The *France Telecom* example shows that the distinction between these types of evidences is far from clear, which suggests that a national court following its own rules of evidence might construe "direct" narrowly and potentially lead to divergence and a significant amount of type II errors (false negatives).

On the other hand, the following sentence in paragraph 20 of the Paper refers to evidence of a strategy to exclude competitors as evidence which may be helpful to interpret the dominant undertaking's conduct. The Paper's reference to "strategy" should probably be understood to mean *subjective* intent to disambiguate a particular conduct. However, the notion of "interpreting" is broader than disambiguating, potentially supporting a primary or exclusive reliance on subjective intent for a finding of illegality: for example, where there is apparent justification for a certain refusal to deal, but damning evidence is found that captures the CEO explaining a real anticompetitive strategy behind the refusal. Given this possibility, the need to address the uncertainties left by the case-law becomes even more important, to prevent less reliable evidence from directing the outcome in future cases.

2.5 Conclusion

In conclusion, a rundown of the cases where subjective intent was integral to the theory of harm under article 102 TFEU illustrates the emergence of a pattern (see below, Fig. 1), although not always consistent, while also highlighting a few "gaps" that require filling.
First, and at the most basic level: subjective intent is never used in isolation from, or in conflict with, its objective counterpart (the existence of likely effects). As to its role, it can be used as additional element to support a finding of infringement established on the basis of objective

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[62] European Commission, 'Guidance on its enforcement priorities in applying Article 82 of the EC Treaty to abusive exclusionary conduct by dominant undertakings' OJ C 45, 24.2.2009, 7–20.
[63] Para. 20 (emphasis added).
[64] See also, with specific regard to predatory pricing, para. 66 which refers to "direct evidence *consisting of documents from the dominant undertaking"* and thus seems to restrict the options even further for such cases.

intent (but not as a defence against it); and it gains particular salience where evidence of objective intent is inconclusive, to disambiguate the nature of a practice that could potentially be either pro- or anti-competitive.
Second, where subjective intent has a disambiguating function, it can only be used to support an infringement if it is based on "objective factors". This does not mean that the evidence provided has to be incontrovertible or even necessarily of "direct" nature: "objectivity" in this context refers to the virtually universal acceptance of the logic behind any inference that is made from it. If there is a reasonable doubt as to its possible interpretation, that evidence cannot be used alone to establish a violation[65]. For example, if that was the only piece of evidence, it would be enough for a defendant to cast doubt on the meaning of words like "fighting ships", "fighting off" a competitor or even "pre-empt" a given market[66]. In contrast, non-objective evidence can be taken into account as part of the overall assessment when combined with other indicia, which may include for instance past conduct or a trajectory of behavior, as long as they are objective and consistent[67]. On this point, the Guidance paper appears to depart from the existing case-law by admitting only the use of "direct" evidence. This discrepancy has the potential to hinder the effectiveness of competition law and lead to divergent outcomes, so it remains to be seen the extent to which it will be followed.

Similarly, the Guidance Paper's statement that subjective evidence can be used to *interpret* conduct by the dominant firm is risky to the extent that it could be taken to mean that evidence of subjective intent may prevail over conflicting evidence of objective intent. However, this would run against a core principle identified in the case-law: the necessity of a link between a subjective and objective components of intent. The next section, by reference to a recent case, illustrates that the risk of departure from that principle is not insignificant.

Fig. 1: Cases where intent played a central role to the establishment of an abuse

Case	**Practice**	**Objective Intent**	**Subjective Intent**	**Trigger words and nature of evidence of subjective intent**	**Role of subjective intent**
AKZO (CJEU 1991)	Predatory Pricing	Pricing below ATCs	Internal documents + threats to competitors	"prices offered to customer chosen to be *well below* competitor's prices to that customer" (indirect, objective)	Disambiguating
Tetra Pak II (CFI 1994)	Predatory pricing	Price below AVCs + magnitude of price differences in country of predation	Internal documents	"need to make sacrifices to *fight off* competitor" (indirect, subjective)	Corroborating

[65] Case T-286/09, *Intel v Commission*, ECLI:EU:T:2014:547 para. 719; case T-25/95, *Cimenteries BCR and Others v Commission* [2000] ECR II-00491, para 1838.
[66] However, it is questionable that a reasonable disagreement can persist on the significance of "pre-empting", after its inclusion in the Guidance paper. See supra n. 63.
[67] This possibility is in fact required by the principle of effectiveness. See C-74/14, *Eturas and others* EU:C:2016:42, para. 37.

Compagnie Maritime Belge (CFI 1996)	Selective price-cutting	Price-matching pattern	Internal documents + admission at hearing	- "*getting rid* of competitor" (direct, objective) - "use of *fighting ships*" (indirect, objective)	Disambiguating
France Telecom (CFI 2007)	Predatory pricing	Pricing below ATCs	Internal documents	"*pre-empting* ADSL market" (direct?, objective)	Disambiguating
Astra Zeneca (CJEU 2010)	Misleading representations to patent office	Sufficient likelihood of creating obstacles to competition + manifest lack of transparency	Internal documents	Instructions to choose a specific date for SPC (indirect, subjective) application; different date for different SPC applications (indirect, subjective)	Corroborating

3. Intent in the algorithmic age: the *Google Shopping* decision and its legal basis

On 27 June 2017, the European Commission closed its investigation in the *Google Shopping* case. It found a breach of article 102 TFEU in relation to Google's "more favourable positioning and display of its own comparison shopping service compared to competing comparison shopping services" (hereinafter, "the conduct")[68]. The Commission's Decision is important for several reasons. First and foremost, it constitutes the first application of the leveraging theory in an algorithmic context, where as a result of certain algorithmic design choices[69] a dominant undertaking systematically directs ("nudges") consumers towards its own goods or services in a secondary market. On its part, Google argued both in the proceedings before the European Commission and in the appeal it lodged against the Decision[70] that the Commission used a novel theory of abuse[71], and therefore in accordance with its previous

[68] European Commission, Case AT.39740 , Brussels, 27.6.2017, C(2017) 4444 final. Available at http://ec.europa.eu/competition/antitrust/cases/dec_docs/39740/39740_14996_3.pdf (hereinafter, "Decision").
[69] By "design choices", I refer here to the rules and criteria embedded in the algorithm, including any subsequent changes or "updates" (as they are typically called in the context of Google search), without entering in this context into the specifics. Further, I am using a particular notion of algorithm, as a set of mathematical instructions to provide ranking and selection intermediation (also known as "gatekeeping") services.
[70] See Case T-612/17, Action brought on 11 September 2017 – *Google and Alphabet v Commission*, OJ C 369, 30.10.2017, p. 37–38.
[71] See also Pinar Akman, 'The Theory of Abuse in Google Search: A Positive and Normative Assessment Under EU Competition Law' 1 Journal of Law, Technology and Policy (2017), 301-374; Magali Eben, 'Fining Google: a missed opportunity for legal certainty?' 14 European Competition Journal (2018), 129-151.

practice[72] should not have imposed a fine[73]. According to Google, the conduct could not be deemed abusive unless it is proved that the top results in Google Search constitute an essential facility. This requires the satisfaction of the stringent criteria laid out in *Bronner* for abusive refusal to deal, that is: (i) the refusal was likely to eliminate all competition in the relevant market; (ii) such refusal was incapable of being objectively justified; and (iii) the service in itself was indispensable to carrying on that person's business, inasmuch as there is no actual or potential substitute in existence for the facility in question[74].

However, the Commission rejected this argument, noting that it had already used a self-favouring theory to establish abuse in a number of cases[75]. The reasoning there is quite succinct: the Decision cites a number of cases that present significant differences from the conduct at stake, without explaining their direct relevance or why the conditions set out in those cases would not apply. For example, the imposition of liability in the *Microsoft* case was squarely dependent on the indispensability of the interoperability information that Microsoft had refused to provide. Similarly, the *Telemarketing* case explicitly refers to the existence of a dominant position in the market for a service which is indispensible for the activities of an undertaking on another market[76], although it claims to apply a broader principle derived from *Commercial Solvens*[77] – where such indispensability was never demonstrated. However, the situation in that case was fundamentally different as it concerned a dominant company's refusal to continue to supply an existing customer[78], as opposed to a *de novo* refusal[79]. This may be interpreted to restrict the application of the ruling, and consequentially its interference with freedom of contract, to circumstances where the prior course of dealing has created legitimate expectations on the undertaking's competitors.

Finally, while the reliance on *Tetra Pak II* from the Commission is useful in pointing out that a dominant company can be liable for conduct carried out on a neighbouring market, it says little about the abuse- since the case concerned a number of practices ranging from tying to predatory pricing, price discrimination and other practices limiting production and technical development. Rather, it is in its reference to *Irish Sugar* that the Commission provides a more substantive suggestion for the abuse in question. The Decision references in particular paragraph 166, where the Court explicitly mentions that the principle established in *Tetra Pak II* is applicable even where the conduct "is not tantamount to refusal to supply"[80]. On one view, this may be read simply as following the same logic of the CJEU ruling in *Telia Sonera* that requiring the establishment of a refusal to deal before any conduct of a dominant undertaking in relation to its terms of trade can be regarded as abusive would unduly reduce the

[72] See Commission Decision COMP/38.096 *Clearstream – Clearing and Settlement* OJ C 165, 2009, 7, paras. 344 and 345; Commission Decision, AT.39985 *Motorola – Enforcement of GPRS Standard Essential Patents* OJ (C 344), 2014, 6, para. 561.

[73] For a persuasive argument that this runs counter to the principle of legal certainty, see Magali Eblen, supra n. **Error! Bookmark not defined.**.

[74] Case C-7/97, *Oscar Bronner GmbH & Co. KG v. Mediaprint Zeitungsund Zeitschriftenverlag GmbH & Co. KG* [1998] ECR I-7791, para. 41.

[75] Decision, para. 649 and 334, referring to Case 311/84, *Télémarketing* EU:C:1985:394, para. 27; Case C-333/94 P, *Tetra Pak II* EU:C:1996:436, para. 25; Case T- 228/97, *Irish Sugar* EU:T:1999:246, para. 166; Case T-201/04, *Microsoft* EU:T:2007:289, para. 1344.

[76] *Id.*, para 26.

[77] Cases 6/73 and 7/73, *ICI and Commercial Solvents v Commission* [1974] ECR 223.

[78] *Id.*, para. 25.

[79] See in this sense also Thomas Hoppner, 'Duty to Treat Downstream Rivals Equally: (Merely) a Natural Remedy to Google's Monopoly Leveraging Abuse', 3 European Competition and Regulatory Law Review (2017) 208.

[80] The specific wording use by the Court is the following: ""Even if the failure to grant rebates to other industrial sugar purchasers is not tantamount to a refusal to supply, the principle of the abusive exploitation of a dominant position on a market to affect competition on another market has already been established".

effectiveness of Article 102 TFEU[81]. However, this statement has a more specific meaning when read in context, i.e. in condemning as discriminatory practices the granting of rebates to wholesale customers depending on whether they competed with the dominant firm at the retail level. Interestingly, *Tetra Pak II* was one of the few cases where the Court embraced the idea that article 102 © is applicable to discrimination which creates competitive disadvantage between a trading party and the dominant firm (primary line injury), as opposed to between that trading party and other customers of the dominant firm (secondary line injury)[82]. Accordingly, this more expansive interpretation of article 102 © would lend itself to application in *Google Shopping*.

I nevertheless submit that, despite the theoretical support offered by Tetra Pak II, the Decision fails to establish an abuse insofar as it does not give sufficient indications on the type of conduct that falls short of the standards of special responsibility ascribed to a dominant company. This also generates problems of adequacy of the remedy imposed, as the Commission unqualifiedly ordered Google to take adequate measures to bring the conduct to an end, and refrain from repeating it, or engaging in any act or conduct with the same or an equivalent object or effect[83]. However, it is difficult for Google and other market participants to give concrete content to the concept of 'self-favoring'. The Commission failed to define the prohibited conduct, and the type of abuse it establishes, despite having at its disposal ample room: the practice of self-favouring may technically be caught as a manifestation of various types of conduct prohibited by article 102[84]. In particular, it could have based its finding of abuse on section (a) of article 102, which prohibits "directly or indirectly imposing unfair purchase or selling prices or other unfair trading conditions" (see below, section 3.2); or alternatively on section[85] (c) of the same article, prohibiting "applying dissimilar conditions to equivalent transactions with other trading parties, thereby placing them at a competitive disadvantage". However, other than dropping in a footnote an ambiguous reference to paragraph 166 of *Irish Sugar*, the Commission never suggested that the conduct in question should be seen from that perspective, rather preferring to rely on the non-exhaustive character of the practices constituting abuse that are enumerated in the text of article 102. This is regrettable because the lack of clarity in the definition of abusive conduct is likely to generate adverse impact on investment and innovation.

3.1 The notion of preferential treatment in *Google Shopping*

The divergence of views between Google and the Commission relates to the specificities of the application of leveraging theory (and in particular the so called 'self-favouring' abuse) in this particular context. In order to appreciate these specificities, it is necessary to make a clarification about the technology under discussion: to provide users with the most relevant

[81] Case C-52/09 *Konkurrensverket v TeliaSonera* [2011] ECR I-527, para. 58.
[82] See Case T-229/94, *Deutsche Bahn AG v. Commission* ECR [1997] II-1689; and Case COMP/38.745, *BdKEP – Restrictions on Mail Preparation,* Commission Decision of 20 October 2004 [unreported], available at http://ec.europa.eu/competition/antitrust/cases/dec_docs/38745/38745_32_1.pdf. It should be noted that not everyone accepts that this is a correct interpretation of the purpose of article 102 ©. See e.g. Damien Geradin and Nicolas Petit, 'Price Discrimination under EC Competition Law: The Need for a case-by-case approach', GCLC Working Paper 07/2005.
[83] Decision, Art. 2-4.
[84] See in this regard Nicolas Petit, 'Theories of Self-Preferencing Under Article 102 TFEU: A Reply to Bo Vesterdorf' (April 29, 2015). Available at SSRN: https://ssrn.com/abstract=2592253 or http://dx.doi.org/10.2139/ssrn.2592253.
[85] See in this regard the Decision by India's Competition Commission in Cases Nos. 07 & 30 of 2012, Matrimony.com v Google LLC, Google India and Google Ireland, available at http://www.cci.gov.in/sites/default/files/07%20%26%20%2030%20of%202012.pdf (finding that Google's leveraging amounted to an imposition of unfair conditions in the purchase or sale of goods or services, in contravention of Section 4 (2) (a) (i) of the Competition Act).

results, search engines undertake editorial functions in indexing, triggering, ranking and displaying content. Those choices are made primarily by designing algorithms, i.e. rules that will govern the operation of Google's crawling, triggering, ranking and displaying technologies to perform the desired process. Because of these editorial functions, algorithms can have in-built biases which lead to systematically favouring certain content, although that may not necessarily be the result of a deliberate choice of the designer. Since the stage of algorithmic design is removed from the generation of results, it is often difficult for the designer to anticipate all the possible consequences. This holds even more true when it comes to unsupervised learning algorithms, recently incorporated into Google Search[86], that are characterized by the property to automatically learn and improve from experience without being explicitly programmed. The problems of transparency, fairness and accountability of algorithmic systems are so complex and important that they have come to define an entire field of research, much of which focused on machine-learning[87]. They are now an increasing source of headaches for courts and regulators.

Given the challenges in predicting the nature and effects of algorithmic design decisions on the market, it is particularly significant that the Decision condemns a conduct resulting from algorithmic design choices, without any disclaimer as to the operator's actual or presumed intent to achieve the prohibited outcome. The underlying criticism seems to be that Google should have appreciated the consequences of its choices, including the impact of those on competition in the market for comparison shopping services. In fact, while in some instances the preferential treatment ostensibly arises from the choice of criteria triggering a given algorithmic result[88], in other parts of the Decision the Commission merely takes issue with the outright exclusion of Google Shopping from the application of certain criteria that adversely affect the position of competing price comparison services (notably the […] and Panda algorithms)[89]. Thus, despite reminding that, in accordance with the case-law of the CJEU, an abuse of a dominant position is prohibited under Article 102 of the Treaty "regardless of the means and procedure by which it is achieved", and "irrespective of any fault", the Decision does not offer any comfort for operators of algorithmic technologies by pointing what particular conduct Google has fallen short of, i.e. what duty of care has been breached. This is because, taken at face value, the Commission's formulation implies that a dominant company having developed or used an algorithm is *de facto* strictly liable for any possible anticompetitive (in particular, self-favouring) effects derived therefrom.

Although one may contend that the Decision must be premised on recognition of intention or negligence, as required by law, this premise is nowhere to be seen in the assessment of Google's liability for algorithmic results. The Commission only refers to *subjective* intent by the concerned undertaking "to favour its own services over those of competitors in order to leverage its position in general search into the market for shopping comparison services"[90], which it uses to satisfy the requirement of objective intent for such conduct to eliminate competitors. In particular, the Commission found in internal documents that the Google's Engineering Director responsible for Froogle, the previous version of Google Shopping, stated that "Froogle stinks" and warned that "(1) [t]he [Froogle] pages may not get crawled without

[86] Cade Metz, 'AI Is Transforming Google Search. The Rest of the Web Is Next', Wired (2 April 2016). Available at https://www.wired.com/2016/02/ai-is-changing-the-technology-behind-google-searches/.
[87] See for instance the annual conferences on Fairness, Accountability and Transparency (FAT) and on Fairness, Accountability and Transparency in Machine Learning (FATML), at https://fatconference.org and https://www.fatml.org/.
[88] A good example is the "signals" for triggering the appearance of Product Universal, and/or its appearance in the middle to top position of the results in the first page: the number of stores and the number of shopping comparison engine in the top-3 generic search results. See Decision, para. 391.
[89] Decision, para. 512.
[90] Decision, para. 491.

special treatment; without enough pagerank or other quality signals, the content may not get crawled. (2) If it gets crawled, the same reasons are likely to keep it from being indexed; (3) If it gets indexed, the same reasons are likely to keep it from showing up (high) in search results […] We'd probably have to provide a lot of special treatment to this content in order to have it be crawled, indexed, and rank well". While this provides a very convincing illustration of Google's general plan to self-favor, proven with direct and objective evidence, the fundamental question is whether such evidence may legitimately be used to satisfy the required intent (in its subjective and objective component) with regard to the particular acts which are being held against the dominant undertaking. Specifically, the Decision takes issue with the outcome of Google's algorithmic choices without proving that either the selection of certain criteria or the granting of an exemption to Google from the application of certain penalties violates a duty of care, from which negligence could be deduced. The only element provided in that regard is that Google does not inform users that Product Universal was positioned and displayed using different underlying mechanisms than those used to rank generic search results, despite the fact that it labeled those search results as "sponsored" (see below, section 3.2).[91]

The net result is that Google or any other dominant company providing algorithmic intermediation services will be required to adopt wide-ranging measures of self-monitoring to ensure "compliance by design", which Commissioner Vestager has recently alluded to[92]. But what is the limit (if any) to how far that compliance framework should go? Would the ranking of two equivalent products in page 1 and 2 of search results be sufficient, for instance, to trigger liability? Would Google Shopping's persistent appearance on the first page, while not necessarily in the top results, be problematic? The Commission provides no guiding principle: neither in the substantive part of the Decision, nor in its remedial order, where it requires Google to ensure equal treatment concerning "all elements that have an impact on the visibility, triggering, ranking or graphical format of a search result in Google's general search result pages" [93]. Ultimately, while Google may be able to get to a good compromise in the definition of the conduct it is required to adhere to under the remedy[94], we may query what that high-level definition of equal treatment means for the future development of algorithmic technologies.

The crux of the problem derives from the fact that the Decision does not define a threshold of materiality for differential treatment by a dominant company to fall foul of Article 102. The Commission presents data showing that the conduct in question can drive competitors out of business, reducing incentives to innovate and consumer choice, and leading to higher prices[95].

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[91] Decision, para. 663.

[92] Margarethe Vestager, 'Algorithms and competition', Speech at the Bundeskartellamt 18th Conference on Competition, Berlin, 16 March 2017. Available at https://ec.europa.eu/commission/commissioners/2014-2019/vestager/announcements/bundeskartellamt-18th-conference-competition-berlin-16-march-2017_en

[93] The only limit it provides in that respect, presumably reflecting the feedback received in the 'market-testing' of the commitments offered to Commissioner Almunia in 2013 and 2014, is that any measure chosen by Google to comply with the order "should not lead to competing comparison shopping services being charged a fee or another form of consideration that has the same or an equivalent object or effect as the infringement established by this Decision". Decision, para. 700.

[94] As a measure implementing the remedy, since 28 September 2017 Google shifted its shopping operations into a separate entity, with other companies now able to bid for places in the Shopping Units. Furthermore, each ad in the Shopping Unit indicates which comparison service is providing it. However, it has been reported that as many as 99% of those Shopping results are held by Google. See Searchmetrics, 'Google Shopping: Is the Revamped Comparison Service Fairer to Competitors?' (29 January 2018), at https://blog.searchmetrics.com/us/2018/01/29/google-shopping-revamped-fairer-to-competitors/. See also Sam Schechner and Nathalia Dozdriak, 'Google Rivals Ask EU to Toughen Measures in Antitrust Case', Wall Street Journal (30 January 2018). Available at https://www.wsj.com/articles/google-rivals-ask-eu-to-toughen-measures-in-antitrust-case-1517334038.

[95] Decision, paras. 594-597.

However, the evidential threshold is lightened by recent case-law that article 102 prohibits behavior that tends to restrict competition or is *capable* of having that effect, regardless of its success[96]. Following that line of cases, the reference in the remedial order to "not engaging in any conduct or act having equivalent *object* or effect[97]" may well be interpreted as preventing algorithmic decisions that have a theoretical capability of favoring Google's own services despite the absence of any materialized, or indeed likely, effects. That would appear to be in tension with the rationale of negligence, which is the violation of a duty of care in connection with the foreseeability and preventability of the harmful act[98]. It also would call for an inquiry into the subjective element (was discrimination the purpose of the developer, or whoever else deploys the algorithm?), which could be highly problematic if unconstrained by the principles identified in section 2.1.

3.2 The Decision's lack of precision in the definition of abusive conduct

As mentioned, a central problem with the Decision is that the line between permitted and prohibited conduct is blurred by the fact that nowhere does the Commission detail what type of algorithmic design conduct amounts to preferential treatment, other than stating that it involves the application of different standards for ranking and visualization to Google Shopping than to other comparison shopping services. In particular, the Decision begs the question of whether a dominant undertaking remains free to set up its ranking and selection ("triggering") criteria, so long as those are applicable indistinctively both to its products and services and to those of its competitors. The Commission seems to gloss over those details, affirming that "[it] does not object to Google applying *certain* relevance standards, but to the fact that Google's own comparison shopping service is not subject to those same standards as competing comparison shopping services[99]". This leaves us with the suspicion that a dominant undertaking such as Google could in fact be found liable for designing its algorithms in a way that leads to a disparate impact on a given class of competitors (or in the case of the implementation of the remedy, its competing comparison shopping services), despite the indiscriminate application of those algorithms to all products and services. While that finding would be consistent with the European Commission's focus on effects, it would certainly run against the presumption of innocence to impose a fine to an undertaking where the effects of its actions were not foreseeable at the time of designing the relevant algorithm (or implementing the relevant algorithmic change). And as it was argued in section 2.1, even beyond the imposition of a fine, this runs against the essence of the notion of abuse, which presupposes some form of intent -either intention or negligence.

By the same token, a blanket prohibition of self-favouring formulated in these terms would be likely to impose a disproportionate burden on a range of undertakings, if not accompanied by some limiting principle: much like a dominant company's indiscriminate conditions of sale may lead to refusal to supply in violation of Article 102 when it fulfills the specific conditions

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[96] Emphasis added. See Id., para. 602; Case C-52/09, *Konkurrensverket v TeliaSonera Sverige AB* EU:C:2011:83, para. 64; Case C- 549/10 P, *Tomra Systems and Others v Commission* EU:C:2012:221, para. 79; Case T-336/07 *Telefónica SA v Commission* EU:T:2012:172, para. 272, upheld on appeal in Case C-295/12 P, EU:C:2014:2062, para. 124; Case C-23/14 *Post Danmark* EU:C:2015:651, para. 66; see also Case T-286/09, *Intel v Commission* ECLI:EU:T:2014:547, para. 85, on this specific point confirmed on appeal in Case C-413/14, *Intel v Commission* ECLI:EU:C:2017:632, para.149.

[97] *Id.*, article 3 (emphasis added).

[98] See Blomsma, supra n. 10, 175.

[99] Id., para. 440 (emphasis added). By choosing to use the word 'certain', the Decision suggests that the use of certain *other* criteria may be problematic. This hypothesis appears to be confirmed by para. 537, according to which "the Commission does not object to Google applying specific criteria *per se* but to the fact that Google *prominently* positions and displays results only from its own comparison shopping service and not from competing comparison shopping services" (emphasis added).

established in *Bronner*[100], an algorithm with indiscriminate application but disparate impact on competitors should be held in violation of Article 102 only if it meets specific requirements serving as proxy of consumer harm. To be clear, this is not a call for the application of the *Bronner* conditions, which is unsurprisingly invoked by Google, but rather a recognition that the Commission would be well advised to narrow the net it casts to catch anticompetitive conduct perpetrated through algorithmic nudging. The case-law simply does not provide a sufficient filter to limit recourse to claims of violation of article 102 (a) or (c) against algorithmic design conduct.

3.2.1 Possible basis under 102 ©

First, when it comes to discrimination under article 102 ©, the requirements for the establishment of an abuse have not been interpreted very stringently. The article requires (i) *dissimilar* conditions in (ii) *equivalent* transactions between (iii) *trading parties*, thereby (iv) placing them at *competitive advantage*. Component (i) is not very well defined in the case-law, and is typically dealt with in conjunction with (ii); however, it has been interpreted to include *any* differential treatment, unless that treatment is objectively justified[101]. The concept of objective justification is due to factors external to the undertaking[102], and the fact that transactions entail different costs for the dominant firm would imply that those are not equivalent in the first place[103]; furthermore, this does not seem to be a relevant consideration for the inclusion into the results of search engines or other algorithmic mediators. The hurdle of "trading" under component (iii) does not appear to be insurmountable either, judging from the Commission's decision in *BdKEP* that there is no requirement of contractual privity[104]. The existence of "mere business contacts" may be established where the business of the affected firm substantially depends upon services provided (as part of its business model) by the dominant undertaking: it would not be a novelty for competition law to give recognition to the legitimate expectations created by the dominant firm, based on the need to maintain the degree of competition that has already been weakened[105]. Some commentators have for instance used this idea to evoke the notion of an "estoppel" abuse, according to which a dominant firm who has voluntarily entered into dealings with another firm must do so on terms that make it possible for the latter to compete[106].

Given the relatively low threshold to establish (i) to (iii), the real test for the success of an abusive discrimination claim has generally been the existence of a competitive disadvantage, although with varying degree of stringency: some decisions have required the differential treatment to be not isolated and more than *de minimis*[107]; however, the majority has inferred the existence of a disadvantage based on logical arguments, in particular looking at a mere

[100] Namely, that the facility that is the object of refusal is indispensable to compete on a downstream market, and that refusal is not objectively justified. See *Oscar Bronner GmbH & Co. KG v. Mediaprint Zeitungs- und Zeitschriftenverlag GmbH & Co. KG*, Case C-7/97 [1998] ECR. I-7791, para. 112.
[101] Case T-65/89, *BPB Industries v Commission* [1993] ECR II-389, para. 94 (confirmed on appeal, Case C-310/93 P, para. 11).
[102] See Ekatrina Rousseva, 'The Concept of Objective Justification' 2 (2006) 2 Competition Law Review, 27, 28-29.
[103] Alison Jones & Brenda Sufrin, *Competition Law* (Oxford University Press, 2016), 567.
[104] *BdKEP*, para 92. But *contra* see Pinar Akman, supra n. **Error! Bookmark not defined.**, at 36, suggesting that this might not be met in the case of Google.
[105] See e.g. Case C-170/13, *Huawei Technologies Co. Ltd v ZTE Corp. and ZTE Deutschland GmbH*, ECLI:EU:C:2015:477, para. 45, 53 and 54.
[106] See Kevin Coates, 'The Estoppel Abuse', 21st Century Competition Blog, 28 October 2013 available at http://www.twentyfirstcenturycompetition.com/2013/10/the-estoppel-abuse/; Nicolas Petit, *supra* n. 84, 8.
[107] Commission decision of 19 November 1990, *Soda-ash–Solvay* OJ 1991 L 152/21.

tendency to lead to a distortion of competition between those business partners[108]. The most recent judgment by the CJEU on this matter has taken a middle path: in *MEO*, the Court held that a differential treatment that is insignificant may in some circumstances be insufficient to cause a competitive disadvantage[109]; while also extrapolating from its case-law a general principle according to which fixing *a priori* an appreciability (*de minimis*) threshold for determining whether there is an abuse of a dominant position is not justified[110]. It was held that the notion of "competitive advantage" does not require proof of actual quantifiable deterioration in the competitive situation, but extends to situations in which that behaviour is *capable* of distorting competition between trade partners[111]; and that the determination of such capability requires an analysis of all the relevant circumstances[112]. All in all, this suggests that prognosticating the existence of an abuse will be difficult for algorithmic operators, which is likely to generate chilling effects.

3.2.2 Possible basis under 102 (a)

Let us briefly consider also the second type of abuse that could explain the *Google Shopping* decision, i.e. the imposition of unfair purchase or selling prices or other unfair trading conditions. In particular, what is relevant here is the second part of the provision, which can be interpreted to cover the rules and criteria used by Google to trigger, display and rank its search results. The argument for the establishment of "trading" in the absence of a contractual relationship would obviously be the same as the one made above, i.e. holding that when a dominant undertaking designs and makes available the results of its algorithmic processes for third parties to rely upon, it has voluntarily entered into a course of dealing with any third party using that service. One may contend that the dominant undertaking is not really trading if it is not receiving direct financial compensation in return for the provision of the service[113], but this can hardly be the only type of trading considered in a data-driven era. First, the value of clickstream data and any the advertising associated with navigational queries cannot be underestimated, and the presence of websites on the list of results is instrumental to the attainment of that value. Second, some of these service providers (including Google, but also price comparison websites) offer prominent placement as part of their business, once again making algorithmic listing an integral component of their trading.

The other element that must be established for an abuse under article 102 (a) is the existence of *unfair* conditions, which in the case-law has been interpreted to mean that the dominant firm takes advantage of the superior bargaining position to impose conditions that are not necessary and proportionate for the achievement of its objectives, and result in a significant limitation of freedom of its trading party[114]. Example of such conduct are long-term contracts with automatic

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[108] Case T-228/97, *Irish Sugar v Commission* [1999] ECR II-2969, para. 188. See also Jorge Padilla and Robert O'Donoghue, *The Law and Economics of Article 82 EC* (Hart Publishing 2006), 567-573.
[109] Case C-525/16, *MEO v Autoridade da Concorrência* EU:C:2018:270, para. 34 (emphasis added).
[110] *Id.*, para. 29
[111] *Id*., para. 28
[112] This includes, for the particular case of a vertical undertaking discriminating against its competitors downstream, the undertaking's dominant position, the negotiating power as regards the tariffs, the conditions and arrangements for charging those tariffs, their duration and their amount, and the possible existence of a strategy aiming to exclude from the downstream market one of its trade partners which is at least as efficient as its competitors. *Id.,* para. 31
[113] See, in relation to Google, Akman, supra n. 84, 36.
[114] E.g. Case 127/73 *Belgische Radio en Televisie v SV SABAM and NV Fonior* [1974] ECR 313; Case 311/84. *Centre Belge d'Etudes de Marche-Telemarketing* (CBEM) v SA *Compagnie Luxembourgeoise de Telediffusion (CLT) and Information Publicite Benelux* (IPB) [1985] ECR 3261; Case 395/87 *Ministere public v Jean-Louis Tournier* [1989] ECR 2521; *DSD Commission Decision* (Case COMP D3/34493) 2001/463/EC [2001] OJ L166/1; *GEMA Statutes Commission Decision* (Case IV/29.971) 82/204/EEC [1982] OJ L94/12. For an overview of

renewal[115], opacity and discretion on the granting of benefits to the other party[116], and deprivation of one's effective property right over purchased equipment by requiring permission for transfer of ownership, prohibiting any modifications, and requiring exclusive repair and maintenance from the seller[117]. In the case of Google, this would arguably be satisfied by the maintenance of opaque and discretionary ranking mechanisms. In fact, the Decision highlights the ample discretion to remove or demote websites retained by Google in its Webmaster Guidelines, where the company warns against certain identified practices but also reserves the right to "respond negatively to other practices not listed" [118]. Furthermore, it recognizes that only a fraction of Google's users ("the most knowledgeable users") is likely to take the "Sponsored" label to mean that different positioning and display mechanisms are used for the corresponding search results[119]. It is worth noting that the Decision does not provide empirical support for the latter position, and that this specific issue was at the core of the Dissenting Opinion to the recent Indian Competition Commission's Decision finding that Google leveraged its dominant position in general web search to favour its own flight comparison service (Google Flights) over competing 'travel verticals'[120]. Overall, these statements indicate that an important element of the Commission's condemnation of the conduct lies in the lack of transparency in Google's prioritization and/or penalization practices, which affects the structure of competition in the market for shopping comparison services. This resonates with the gist of *Astra Zeneca*, where the Court found that a dominant company must be transparent with regard to criteria which enable it to impair competition with methods falling outside the scope of competition on the merits, and a duty to prevent that from happening.

One may therefore expect that the transparency and intelligibility of algorithmic practices will play a role in determining the scope of differential treatment that may be caught under Article 102. Nevertheless, even admitting the relevance of those considerations, it remains to be seen the extent to which those can serve as defense to a self-favouring allegation. One could argue, for instance, that Google should not be allowed to escape scrutiny by making it crystal clear that its search services systematically prioritize content coming from domains starting with "Goo", or pages displaying its official logo. Condoning such conduct would run counter to the antitrust doctrine's rejection of formalism, including the established principle that an abuse of dominant position is prohibited regardless of the means and procedure by which it is achieved[121]. Following this argument, the fact that Google has come consistently on top of the auctions run for its Shopping Unit slots as part of its remedial measures[122] should at least raise some eyebrow about the adequacy of those measures, highlighting the importance of the link with a clear and consistent definition of the abuse in question.

3.3 Conclusion

The Commission's decision in *Google Shopping* is a proverbial "mixed bag" from the perspective of advancing antitrust doctrine: on one hand, it represents a milestone for the treatment of algorithmic leveraging, offering a large amount of evidence to illustrate that self-favouring in this context may lead to foreclosure. On the other hand, it leaves many questions

relevant cases until 2008 see Pinar Akman, 'The Role of Exploitation in Abuse under Article 82 EC' 11 Cambridge Yearbook of European Legal Studies (2009).

[115] Case 247/86, *Alsatel v SA Novasam* [1988] ECR 5987, para. 10.

[116] Case T-203/01, *Manufacture Francaise des Pneumatiques Michelin v EC Commission* [2003] ECR II- 4071, para. 141 (in particular, in the granting of rebates).

[117] Case T-83/91, *Tetra Pak International SA v EC Commission* [1994] ECR II-755, para 140.

[118] Decision, para. 347.

[119] Id., paras. 536 and 599.

[120] Cf. *Matrimony.com* Decision, supra note 75, para. 248; and Dissenting Opinion, paras. 5-6.

[121] Id., para. 338; Case 6/72, *Europemballage and Continental Can v Commission*, EU:C:1973:22, paras. 27 and 29; Case T-128/98, *Aéroports de Paris v Commission* EU:T:2000:290, para. 170.

[122] See supra, note 94.

unsettled concerning the scope and limits of the type of abuse in question. Most notably, by failing to properly characterize the intent needed to fall into abusive self-favouring, it lends itself to an interpretation that is overly restrictive; and in doing so, t is liable to violate the presumption of innocence, the principle of legality as well as the principle of proportionality in relation to the remedy. While it is hoped that the Commission will make the necessary adjustments in the approval of the measures offered by Google to restore equal treatment in the relevant market, one cannot help but noting that it will be the Decision and the analysis contained therein which will set the precedent, at least while the appeal by Google to the EU General Court is pending[123].

4. *Google Shopping* as a cautionary tale for antitrust intent in an era of algorithms and big data: the need for limiting principles

Google Shopping is a great test case for the future of competition enforcement, as it gives us a preview of some of the problems that we are likely to encounter with the increasing automation of a range of human activities and the consequent delegation of responsibilities to the machines. There have already been multiple instances over the last decade of algorithms generating problematic and presumably unanticipated results, typically remedied by the designers or controllers of those algorithms in response to public backlash or court order[124]. The clear tendency in these situations is to attempt to escape scrutiny by demonstrating that the action was the result of complex algorithmic processing, which would have been hard to predict *ex ante*.

Antitrust is a relatively newcomer in this field, but it is clear that in order to maintain and promote effective competition, we need to be able to extend the rules of liability to situations where the principal is one step removed from the agent. This implies that it is particularly important to define exactly what constitutes valid antitrust intent in this context, how it can be proved and to what extent it must be proven. Importantly, the discussion of antitrust intent in article 102 TFEU exposed a couple of problems which are likely to surface in an era of algorithms and big data.

First of all, the pervasive reliance on algorithmic technologies, big data and predictive analytics may significantly impact the processes of abstraction and inferences which decision-makers used to rely upon, and which may form the basis for the definition of objective intent. The most important consequence of that is that the processes of prediction for dominant companies might be significantly more advanced and sophisticated than those of other market participants, both consumers and competitors, as well as competition authorities[125]. This suggests that perhaps a greater role should be conceived for *subjective* standards of liability, which would also be facilitated by the increased availability of records. The use of an intention-based standard, as opposed to negligence, would enable authorities to judge dominant firms on the basis of their own superior knowledge, rather than one of the reasonable (average) person. Unfortunately, the problem with that idea is that the weight that can be attached to subjective intent is elusive: despite the absence of incohate offences against competition under EU law, courts have never

[123] In that appeal, Google puts forward several pleas, including two concerning the inappropriate characterization of its conduct as discrimination and two concerning the inadequate consideration of objective justifications. See Case T-612/17, Action brought on 11 September 2017 – *Google and Alphabet v Commission* OJ C 369, 30.10.2017, 37–38.

[124] See e.g. Stavroula Karapapa, Maurizio Borghi, 'Search engine liability for autocomplete suggestions: personality, privacy and the power of the algorithm' (23) 3 International Journal of Law and Information Technology (2015), 261–289.

[125] A phenomenon that Stucke and Grunes call "nowcasting": see Maurice E. Stucke and Allen Grunes, *Big Data and Competition Policy* (Oxford University Press, 2016).

explicitly clarified the extent to which subjective intent must be linked to an anticompetitive effect. Should a misconceived attempt to abuse a dominant position be punished? The case-law has consistently based abuses on the concurrence of a subjective and objective component, which it is argued here that should become a guiding principle for future cases (see below, section 4.1).

Secondly, it is crucial to clarify what sort of methods of proof and inference would be deemed "subjective", and therefore considered only as additional and supporting evidence: tracing the impact of an algorithm to the intent of its originator is likely to be the key and sometimes only question for establishing liability, for which we must have an answer. To complicate that, the distinction between "subjective" and "objective" may be significantly different from that between "direct" and "indirect" evidence set out in the Guidance Paper. And as we know from previous experience, it is questionable that the Paper will be followed at national level when it goes beyond the *acquis*[126].

Third and relatedly, the process of inference of intent from algorithmic action must have human fallacy as a backstop. We cannot expect developers or controllers of algorithms to prognosticate any possible anticompetitive effect that may result from their actions, as this would certainty hinder the deployment of innovative algorithms. However, we might want to hold them accountable (if not liable) for those choices by requiring transparency and explainability of automated decisions, as is currently done in the field of data protection law[127]. This is indeed the most pressing question: to what extent can objective antitrust intent be inferred from a set of actions performed by an algorithm, such that they can be linked to negligence in design and control? On one hand, antitrust intent can serve as a safeguard against the imputation to an algorithmic controller or designer of any possible impact an algorithm can generate on the market (see the principle identified in section 2.1, and formalized in section 4.1 below). On the other hand, an insufficiently clear definition of its role can be chilling investment and innovation in the development of predominantly beneficial technologies, simply because they might conceivably produce anticompetitive outcomes. For this reason, it is submitted that the establishment of a "safe harbor" (see below, section 4.2) will enable to cabin investment and innovation into algorithmic technologies that comply with some fundamental principles.

4.1 Offering a limiting principle: the case for "qualified intent"

As illustrated, the potential reach of the concept of preferential treatment laid out by the European Commission in the *Google Shopping* decision is quite broad, and as currently formulated is likely to generate adverse consequences for investment and innovation. Accordingly, what is needed for a workable concept of preferential treatment is a limiting principle which provides legal certainty for undertakings offering algorithmic selections or ranking services.

It is submitted that a valid limiting principle to the scope of self-favoring can be found in a more careful and systematic treatment of intent in antitrust violations, with particular consideration for its role in establishing liability for algorithmic decisions. This article therefore proposes a "qualified intent" doctrine, drawing from the "qualified effects" test used to establish extraterritorial jurisdiction in several EU antitrust cases, and recently endorsed by

[126] See Zlatina Georgieva, 'Competition soft law in French and German courts: A challenge for online sales bans only? 'Maastricht Journal of European and Comparative Law 2017, Vol. 24 (2) 175–193
[127] See article 13 (2) (f), article 14 (2) (g), article 15 (h), article 22 as well as Recital 71 of that Regulation.

the CJEU in *Intel*[128]. The qualified effects test allows the extension of jurisdiction outside the common EU market when it is *foreseeable* that the conduct in question will have an *immediate and substantial effect* in the European Union. According to that test, it is sufficient to take account of the probable effects of conduct on competition in order for the foreseeability criterion to be satisfied[129]; in turn, while the criterion of immediacy has not been comprehensively addressed, it has been held that the mere capability of producing an immediate effect is sufficient, when considering a conduct as integral part of an overall strategy to foreclose market access[130]. Lastly, the substantiality criterion has been held to apply to each part of the conduct considering the overall strategy, for otherwise that would lead to an artificial fragmentation of comprehensive anticompetitive conduct.[131] Translating this into the intent context, it is argued that the requisite intent should be grounded on three basic principles: (1) the anticompetitive outcome is foreseeable for the dominant company, based on its knowledge or reckless disregard of the consequences of the action; (2) that outcome is an immediate consequence of the dominant company's purported conduct, meaning that its materialization does not require intervening actions by competitors or consumers that depart from the *status quo*; (3) it is substantial, in the sense that the intent is grounded upon a set of facts which, in the context of the entire body of evidence, make the achievement of the anticompetitive outcome more likely than not.

To a large extent, this test is a rationalization of existing case-law, in particular with regard to conditions n. 2 and 3. To clarify, the concept of "*status quo*" in condition n. 3 could be best illustrated by reference to the idea of chain of causation in *dolus eventualis*, where responsibility for events caused by an act supplemented by an intervention by a third party can be attributed to the perpetrator where circumstances suggest that the intervention was a foreseeable risk, and the perpetrator could not have been unaware of the consequences. More significant is the suggestion provided in condition n. 1, which links the foreseeability of the event to the knowledge or reckless disregard of the perpetrator: here, the change is subtle as it simply moves from a standard of "knowledge or negligence" to a standard of "knowledge or reckless disregard". The consequence of such move is that the inquiry becomes subjective, rather than objective, thereby enabling authorities to take into account the superior knowledge of certain dominant firms over a reasonable market participant.

From a systemic perspective, these three conditions would allow the application of the self-favoring abuse in the algorithmic context to be compatible with the principle of proportionality[132], the principle of legal certainty[133], and both the principle of legality and the presumption of innocence in relation to the imposition of sanctions[134]. In particular, the principle of proportionality prevents the imposition of a prohibition that makes compliance for an undertaking impractical, with the result of deterring that undertaking from engaging into a broader set of conducts than the one the legislator aims to prevent. In fact, an alternative measure exists which would achieve the objective of preventing algorithmic leveraging, but

[128] Case C-413/14 P, *Intel Corp. v European Commission* ECLI:EU:C:2017:632, paras. 40-65.
[129] Id., para. 51.
[130] Id., para. 52.
[131] Id., para. 57.
[132] The principle of proportionality in EU law holds that "the lawfulness of the prohibition of an economic activity is subject to the condition that the prohibitory measures are appropriate and necessary in order to achieve the objectives legitimately pursued by the legislation in question; specifically, when there is a choice between several appropriate measures recourse must be had to the least onerous, and the disadvantages caused must not be disproportionate to the aims pursued". See Case C-331/88, *The Queen v. Minister for Agriculture, Fisheries and Food and The Secretary of State for Health, ex parte: Fedesa and others* [1990] ECR I-423, para. 113.
[133] To the effect that this is a general principle of EU law, see case C-94/05, *Emsland-Stärke GmbH v Landwirthschaftskammer Hannover* [2006] ECR I-2619, para. 43.
[134] See supra, section 2.1.

would not equally restrict freedom to conduct business, and indeed deter beneficial conduct in the first place: the legislator could establish a requirement of intent linked to a clear process of "algorithmic due diligence", giving the dominant undertaking a benchmark against which their conduct can be measured. This also satisfies the principle of legal certainty, which require foreseeability in the application of the law[135], and the principle of legality and the presumption of innocence, according to which any doubts as to the question of guilt are resolved in favor of the accused[136]. The next section provides a concrete suggestion as to how that process could be formulated, including a further adjustment which appears necessary to ensure the effectiveness of competition enforcement in a world of a fast-moving (and self-learning) algorithms.

4.2 Towards a negligence-based safe harbor for gatekeeping algorithms?

As discussed so far, much of the controversy over the imputation of liability for algorithmic conduct stems from the absence of a clear duty of care with regard the effects generated by certain kind of algorithmic tools. Accordingly, the proposal advanced in this section is to establish just that, with a view to qualifying the standard of diligence that is expected from dominant firms offering algorithmic services. The proposal builds on the Commission's qualification of Google's conduct as "active", i.e. not simply refusing to give competing comparison shopping services access to a portion of its general search results pages, but engineering preferential treatment in the design of the algorithm (specifically, exempting Google Shopping from demotions and "hardcoding" its position in the ranking).[137] This raises the question of how undertaking ought to interpret the active/passive nature distinction moving forward: what is the diving line?

Of course, the likely interpretation is that the Commission meant that abusive refusal to deal is a passive conduct, in the sense that it requires a prior request by a competitor to be granted access, whereas preferential placement is a conduct that is initiated and completed by action of the dominant company alone. However, a deeper and more conceptual distinction would be one between results that are a foreseeable consequence of the algorithmic design choices made by the dominant firm, and results that are generated automatically without its knowledge or control. This distinction would more accurately reflect the criteria deemed relevant for the attribution of liability for machine-generated result: not only because it would promote responsibility in design and control over algorithmic processes in line with developments in other areas of law, but also because in a world of multiple and machine-to-machine interactions the potential speed and automatic nature of acts such as requesting and granting access could blur the distinction between ranking and access.

A useful reference in marking the line between "active" and "passive" in the context of algorithmic is the "safe harbor" provided by article 14 of the E-commerce directive, which grants a content host immunity from liability under European law for the information stored provided that: "(a) it does not have actual knowledge of illegal activity or information and, as regards claims for damages, is not aware of facts or circumstances from which the illegal activity or information is apparent; and (b) upon obtaining such knowledge or awareness, acts

[135] Case C-63/93, Duff and Others [1996] ECR I-569, para. 20; Case C-107/97, *Rombi and Arkopharma* [2000] ECR I- 3367, para. 66; Case C-199/03, *Ireland v Commission* [2005] ECR I-8027, para. 69; Case C-17/03, *VEMW and Others* [2005] ECR I-4983, para. 80; Case C-158/06, *ROM-Projecten* [2007] ECR I-5103, para. 25.
[136] See in this regard Directive 2016/343 of 9 March 2016 on the strengthening of certain aspects of the presumption of innocence and of the right to be present at the trial in criminal proceedings, OJ L 65, 11.3.2016, p. 1–11.
[137] Decision, para. 650.

expeditiously to remove or to disable access to the information"[138]. The CJEU's reading of the safe harbor, based on Recital 42 of the Directive, is that this requires an activity of a mere technical, automatic and passive nature, which implies that the information society service provider has neither knowledge of nor control over the information which is transmitted or stored[139].

Those conditions could then be used to design, with appropriate institutional and procedural safeguards (above all, a fair and independent dispute resolution procedure), a framework of 'notice and explanation' for undertaking that consider themselves to be adversely affected by the algorithm in their ability to compete in the market. This framework would grant the algorithmic operator immunity from liability for any differential treatment which puts an undertaking competitive disadvantage (*vis a vis* the operator himself or a third party) as long as a dedicated procedure was put in place to receive such notices and respond within an appropriate timeframe. The affected undertaking, if unconvinced by the explanation, could then submit that together with its substantiated claim to an independent body, which could order the readjustment of the ranking of that undertaking but also establish the allocation of litigation costs, as well as impose penalties for baseless complaints. I am not simply re-branding the persuasive proposal of a search engine court made by Brancha and Pasquale more than 10 years ago[140], but suggesting that this could be a broader mechanism which can be promoted through a safe harbor[141] for the types of gatekeeping algorithms discussed in this paper.

It should be noted that article 14 of the E-commerce directive is useful also in one more respect, and that is in establishing a connection between the safe harbor and the element that we have been invoking so far, a diligence standard. Specifically, the Court has stated that knowledge of illegal activity or information can be inferred from the awareness of facts on the basis of which a "diligent economic operator" should have identified the illegality in question and acted in accordance with Article 14(1)(b) of Directive (taken the content down).[142] Translating that insight into our model, algorithmic operators would not be entirely immune from scrutiny if they were somehow aware of facts, irrespective of a notice, that would make the detrimental impact apparent. To make that more specific, the safe harbor could include among its conditions the adherence to a due diligence procedure for the design of algorithms that can effectively impact consumer choice through the selection or ranking of content. Such procedure could for instance rely on established techniques to detect the existence of bias against various classes of market players[143], maintain a record of that testing for inspection by a competition

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[138] Directive 2000/31/EC of the European Parliament and of the Council of 8 June 2000 on certain legal aspects of information society services, in particular electronic commerce, in the Internal Market, OJ L 178, 17.7.2000, p. 1–16. Applying these conditions to the Commission's reasoning, they could be used to give content to the notions of "active" and "passive" conduct mentioned at para. 650: see *supra*, note 137.

[139] Joined cases C-236/08 and C-237/08 *Google France v Louis Vuitton et al* [2010] ECR I-02417, paras. 112-114. See also case C-324/09, *L'Oréal v eBay International* [2011] ECR I-06011, paras. 111-113; and case C-291/13, *Papasavvas v O Fileleftheros Dimosia Etairia* ECLI:EU:C:2014:2209, paras. 39, 41 and 45.

[140] Oren Bracha and Frank Pasquale, 'Federal Search Commission - Access, Fairness, and Accountability in the Law of Search', 93 Cornell Law Review 1149 (2008).

[141]Safe harbors are not uncommon in EU competition law, the most recent example being the "choreography" established by the CJEU in *Huawei v ZTE* (Case C-170/13 *Huawei Technologies Co. Ltd v ZTE Corp. and ZTE Deutschland GmbH* ECLI:EU:C:2015:477) to exempt from liability standard essential patent owners who seek an injunction in court after having followed the designated procedure. For an analysis of the scope and strength of the safe harbor, see Nicolo Zingales, 'The Legal Framework for SEP Disputes in EU post-Huwaei: Whither Harmonization?' 36 (1) Yearbook of European Law (2017). 628–682. Similar to the safe harbor defined in Huawei, this proposed safe harbor would depend on the acceptance of third-party determination of the disputes that give rise to potential liability.

[142] *L'Oreal v eBay*, supra n. 139, para. 120.

[143] See Christian Sandvig et al. 'Auditing Algorithms: Research Methods for Detecting Discrimination on Internet Platforms', Data and discrimination: converting critical concerns into productive inquiry (2014), 1-23. See also

or judicial authority (or the independent body proposed in this section), and even define a threshold of adverse impact warranting a change of the existing rules or criteria. Interestingly, the market is already developing such tools in specific domains[144], so it may not be too far down the road that we start to see bias detection being provided as a service in the industry, and becoming part of the regular due diligence procedure before putting impactful algorithms into commerce.

5. Conclusion

This paper surveyed the cases under article 102 TFEU that revolved around the existence of anticompetitive intent, and discussed its role in some detail. Having addressed the key definitional questions in section 1, section 2 permitted us to identify key principles relating to the use of evidence subjective intent, most notably (a) its necessary link with effects for purpose of establishing a violation; and (b) the need for it to be based "objective factors". Although the interpretation of the latter might vary, the General Court's ruling in *Astra Zeneca* suggested that such evidence cannot be extrapolated through tenuous inferences and insinuations, but must be built upon a solid logical steps which should not leave room for doubts.
Section 3 of the paper delved into the Commission's decision in *Google Shopping*, gauging the extent to which it complies with those established principles. This Decision is particularly interesting for the dual role of intent: firm and prominent in its subjective expression, as demonstrated by compelling documental evidence; and feeble and nebulous in its objective manifestation, as is suggested by the lack of standards over what constitutes preferential treatment. This is particularly problematic when considering that, as a consequence of the shallowness in this definition of preferential treatment, a host of companies providing algorithmic intermediation services might be prevented in the future from giving effect to that arguably constitutes the core results of their processes, just to stay clear of antitrust violations. Even more importantly, the imposition of liability in the absence of clear benchmarks clashes with the principle of legal certainty, the principle of legality and the presumption of innocence.

Accordingly, section 4 pondered the consequences of the *Google Shopping* Decision for providers of algorithmic gatekeeping services, attempting to offer suggestions to guide the resolution of future cases that are bound to arise in this area. Two suggestions have been offered in particular: one aimed to fix the problem of reliance on subjective intent which is disjointed from any possible anticompetitive effect, and the other purported to address the issue of identification of the standard of care on the basis of which objective intent can be established. The first problem is easier to solve, thanks to the case-law shedding the light into the right direction; in this sense, the proposal simply captures the rationale of the existing cases recommending to follow a three-pronged test, which asks whether the anticompetitive effect for the purported conduct is foreseeable, immediate and substantial. Importantly, the parameter of foreseeability would be linked to a subjective, rather than an objective test, enabling authorities to elevate the standard of prognosis for a purported conduct to the sophisticated knowledge level of a particular dominant firm, rather than that of a potentially less knowledgeable market participant.

Karen Levy and Solon Barocas, 'Designing Against Discrimination in Online Markets' 32 Berkeley Technology Law Journal (2018).

[144] Will Knight, 'Microsoft is creating an oracle for catching biased AI algorithms', Technology Review (25 May 2018), available at https://www.technologyreview.com/s/611138/microsoft-is-creating-an-oracle-for-catching-biased-ai-algorithms.

With regard to the second problem, it is clear that the designation of a specific standard of care is a complex question that goes beyond the scope of the paper. However, the suggestion presented here concerned a procedure which aims to reconcile the need to secure effective competition enforcement with administrability, and the imperative not to prohibit or chill legitimate business conduct. The dilemma before us is, of course, what would an optimal framework look like from that tri-dimensional perspective?

It is useful at this point to remind some of the work of Stacey Dorgan, who has identified four different ways in which the law can approach design choices: absolute non-interference (i.e., accepting any kind of design choice as legitimate as long as it produces an improvement); the metric of economic rationality (e.g., the "no economic sense" test, which is argued to be the basis for the establishment of objective intent); second-guessing the merits of any particular choice under a cost-benefit analysis (which she calls the "competitive effects balancing" test); and finally, a subjective intent inquiry, where any evidence of such intent can be used to qualify a given design choice as anti-competitive[145]. Dorgan suggests that courts should be open to examining the relative effects of different aspects of a product modification, rather than remaining anchored on wooden benchmarks[146].

This theory provides strong support for the argument that we cannot accept a test that departs from intent, i.e. based simply on absolute non-interference, no economic sense, or full examination of the merits in each particular case. Accordingly, the assessment of algorithmic choices should follow a structured test, with a shifting burden of proof. Furthermore, the utility of a court-based system (or even an administrative proceeding) to adjudicate these claims in a fast-moving environment as the one we are discussing in this contribution appears limited - note for instance that the complaints in the *Google Shopping* case were lodged with the European Commission in November 2009, the investigation was officially launched in December 2010, and the decision was only taken in June 2017. Accordingly, the proposal advanced in the previous Section is to establish an alternative dispute resolution system that is able to look into the merits of these complaints. At the same time, the proposal includes a screening mechanism enabling applicants to receive an explanation by the dominant company for any algorithmic choice that has impacted on their competitive position, which would filter out any objectively justified discrimination. Interestingly, as this paper was being written the EU has brought to light a proposed Regulation on Fairness in Platform to Business Relations[147], which would require platforms both to provide an explanation for removal or demotion, and to institute a mechanism of alternative dispute resolution.

Furthermore, the procedure suggested here provides an additional suggestion building upon the well-established model of notice and takedown, which has served as a useful compromise between platforms and content creators for almost two decades. This model is not without its flaws, especially in terms of discouraging voluntary content moderation measures for fear of

[145] Stacey Dorgan, 'The Role of Design Choice in Intellectual Property and Antitrust Law', 15 Columbia Technology Law Journal 27 (2016). Note that this list of approaches is not exhaustive. For instance, the European Commission's approach in Google Shopping suggests a moderate degree of (non-) interference with design choices: the Commission brushed aside the efficiency defense raised by Google, according to which the algorithmic changes that they made improve the quality of the search service for consumers by providing them with "the most relevant and useful results possible". The Commission contended that achieving those efficiencies cannot imply that Google Shopping is systematically favored. See Decision, para. 662.
[146] *Id.*, 61.
[147] Proposal on promoting fairness and transparency for business users of online intermediation services, COM(2018)238/974102. Available at https://ec.europa.eu/info/law/better-regulation/initiatives/com-2018-238_en.

triggering 'knowledge' of illegal activity[148]; for this reason, it was recommended to integrate into the model a due diligence procedure requiring the testing of algorithmic design choices before they are implemented. In our proposal, antitrust liability for algorithmic result is excluded for those providers that are compliant with this framework, i.e. (1) are able to demonstrate the testing of possible bias in their algorithms; (2) have in place a dedicated procedure to receive notices of discriminatory treatment and respond timely with an explanation; and (3) submit to an independent dispute resolution system to resolve any controversy arising from such notices.

While one could criticize the proposal for imposing significant costs on undertakings, it should be noted that the resources and expertise necessary for adherence to this framework may well be used (and to some extent already are) in other areas, for instance to deal with content removal and claims of liability for third party content. Accountability for the results of algorithmic agents is one of the key regulatory challenges of the day, and it is here to stay. With that in mind, the global antitrust community has a responsibility to clarify the scope of the nascent antitrust duty to police one's own algorithm. This exercise should aim at ensuring a sufficient protection against unfair manipulation without undermining the incentives to invest and innovate in algorithmic technologies. A carefully designed safe harbor is the best way to achieve that balance.

[148] See e.g. the narrative in Danielle Citron and Quinta Jurecic, 'Platform Justice: Content Moderation at an Inflection Point', Hoover Institution Aegis Series Paper No. 1811, pp. 11-12.

CPI EU News Presents:

Apple/Shazam: Data Is Power, But Not A Problem Here

By Nicolo Zingales (Sussex Law School)[1]

Edited by Thibault Schrepel, Sam Sadden & Jan Roth (CPI)

CPI COMPETITION POLICY INTERNATIONAL

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Introduction

Is there a significant impediment to effective competition where a major provider of music streaming services acquires a leading application for automatic music recognition, particularly insofar as the latter enables the identification and targeting of users of competing streaming apps? In *Apple/Shazam*,[2] the European Commission answered this question in the negative, considering several ways in which the data collected through that application could lead to a competitive advantage. The Decision constitutes an important addition to the series of EU merger cases involving the use of customers' personal data,[3] as distinct from broader "big data" concerns.[4]

Facts

On March 14, 2018, the Commission received the notification of a concentration that would result in Apple's acquisition of Shazam, a developer and distributor of music recognition apps for smartphones, tablets, and personal computers. The notification followed a referral pursuant to a request made on December 21, 2017 by the Austrian competition authority, to whom the acquisition was notified on December 12, 2017; competition authorities of seven more EEA Member States subsequently joined the request. On April 23, 2018, the Commission opened a Phase II investigation due to two distinct non-horizontal and non-coordinated effects:[5] (a) the potential foreclosure of competing providers of automatic content recognition ("ACR") software solutions as a result of conduct such as pre-installing Shazam on iOS, integrating Shazam with iOS, or degrading the interoperability of ACR solutions provided by Shazam's competitors on iOS; and (b) the potential foreclosure of competing providers of digital music streaming apps as a result of Apple gaining access to commercially sensitive information on its rivals through the Concentration.

However, having conducted an in-depth investigation on the databases maintained by Apple Music, Apple Music's competitors, and Shazam's competitors and having examined several possible concerns arising from the concentration, the Commission concluded in its Decision on September 6, 2018 that the Transaction would not significantly impede effective competition in any of the following: (i) the licensing of music charts data at worldwide level, in the EEA or in any of the Referring States; (ii) online advertising services in any of the Referring States; (iii) digital music streaming apps in the EEA or in any of the Referring States; and (iv) ACR software solutions at worldwide level or in the EEA.

The Decision

The Decision takes a close look at the digital music industry, including digital music streaming services and ACR software solutions, and the role played by user data in generating insights, product development, and targeted advertising. It identifies five distinct relevant markets: (1) software solution platforms; (2) digital music distribution services; (3) ACR software solutions, including music recognition apps; (4) licensing of music data; and (5) online advertising.[6] The Commission left open the possibility of further market segmentation, as there would be no impediment of effective competition under any of the plausible definitions. Nevertheless, what appears clear from the competitive assessment of these markets is that Apple has a considerable share (20-30 percent) both in software solution platforms and digital streaming apps; while Shazam has a prominent share (in excess of 30 percent) in the market for music recognition apps for smart mobile devices, and a more marginal position in the market for ACR software solutions (5-10 percent). Finally, although the

investigation was inconclusive with regard to the market shares of the parties in the markets for licensing of music charts data and online advertising, the Commission confirmed in its investigation the existence of multiple alternative providers.[7] That finding, along with the complementarity of the parties' datasets, led to the conclusion that the merger would not give rise to horizontal effects.[8]

With regard to non-horizontal effects, the Commission considered potential foreclosure of competing providers of digital music streaming apps due to the acquisition of commercially sensitive information, compounded by two possible groups of practices that Apple could undertake post-Transaction, that is denial or degradation of access of Apple Music's rivals to: (i) Shazam's referral mechanism as a customer acquisition channel; (ii) Shazam's referral mechanism as a functionality that boosts user engagement and enriches user experience; (iii) Shazam as an advertising tool; (iv) Shazam as a provider of in-app music recognition functionalities; (v) Shazam's User Data as an input to improve existing functionalities, or offering additional functionalities, on music streaming services.

Thus, the first and main theory of harm reviewed by the Decision concerns the possibility that Apple would take advantage post-transaction of the information acquired by Shazam, including via its current API integration with Spotify, to derive commercially sensitive information. In particular, Apple could combine the Customer App Information (which includes information about the presence of non-pre-installed digital music streaming apps on the mobile device where Shazam is installed) with additional identifying information (such as email address, Facebook ID, mobile's advertising ID, etc.) enabling it to draw up a list of customers of Apple Music's and potentially target them with personalized offers. Here the Commission notes, "without prejudice to the assessment by competent data protection authorities" that such data aggregation seems to be permitted under the General Data Protection Regulation ("GDPR"), as Shazam's terms of service "appear to inform" on the processing of the Customer Information processed by Shazam.[9]

Furthermore, Shazam is already able to access data about which apps are installed on a user's Android device, because the Android Developer Guidelines allow all apps to do so. On the other hand, Spotify's developer terms and conditions are quite stringent, imposing developers to: (i) only request from Spotify users the data they need to operate their app; (ii) not to email Spotify users without explicit consent; (iii) completely and accurately disclose the privacy practices and policies they apply on their app or website; and (iv) not use Spotify's user data "in any manner to compete with Spotify."[10]

Nevertheless, despite the existence of legal and contractual constraints on the use of Customer App Information, the Commission assessed whether the targeted advertising made possible by the combination of databases was likely to have negative impacts on effective competition, and concluded that it did not on three grounds.[11] First, the ability to access the Customer App Information on Android is not limited to Shazam and would not be limited to Apple post-Transaction (unlike for iOS). Second, the market investigation clearly indicated that the digital music streaming service market in the EEA (and in the Referring States, including Iceland where Apple Music is active) has been growing considerably, and that there are already several providers with the capability of targeting "music enthusiasts." Third, the Commission noted that Apple has stated its plans to change Shazam's data collection practices in order to bring them in line with Apple's industry-leading positions on privacy and, thus, to update the Shazam app for OSs other than Apple's OSs so that it will "not send to Apple the Customer App Information unless the music streaming service of that user agrees to allow this information to be sent to Apple."[12]

The second theory of harm contemplated by the Decision is one of denial and degradation of access by competitors to Shazam's referral mechanism as a customer acquisition tool. The Commission here

determined that, even if the merged entity were to have the technical ability and the incentives to engage in such practices, it is unlikely that they would have the ability to foreclose competing providers of digital music streaming apps and adversely affect competition.[13] This is because Shazam's market shares have not translated into a significant degree of market power. And in fact, given the low number of referrals for registration currently coming from Shazam, the effects of denial or degradation of access of competing providers of digital music streaming apps to Shazam's referral mechanism are unlikely to be sufficient to reduce their ability or incentives to compete.

A third and related theory considered by the Decision concerns the denial and degradation of competitors' access to Shazam's referral mechanism as a functionality boosting engagement and enriching experience. Here again, the Commission notes that the merged entity would lack the incentives to foreclose competition simply because of Shazam's limited market power,[14] and the limited relevance of referral mechanisms in competition between digital music streaming apps. The Commission notes that already pre-Transaction, the referral tile to Apple Music has a more prominent position on iOS devices (due to an existing partnership between the merging parties), which has failed to produce significant results in user engagement. And in any case, nothing would prevent users, post-transaction, from "shazaming" songs and listening to them on rival digital music streaming apps.[15]

A fourth and important theory of harm in the Decision explores the possible "big data" advantage arising from the acquisition of Shazam: Shazam's data could be exploited to improve existing functionalities, or offer additional functionalities, on digital music streaming apps. Here, the Commission concludes that Shazam User Data does not appear to be unique and, thus, be able to confer a significant "data advantage" to Apple post-Transaction.[16] The Commission's assessment is based on an in-depth investigation of data available on users of digital music services using four relevant big data metrics: that is the variety of data composing the dataset; the speed at which the data are collected (velocity); the size of the data set (volume); and the economic relevance (value). In particular, it finds that Shazam's data are not more comprehensive than other datasets available in the market, they are generated at a lower speed and with lower per user engagement, and have never been considered as a strategic asset by the merging parties.

A fifth theory of harm was that Shazam could be used to serve more effective ads, for instance through push notifications that promote Apple Music on Android devices. However, this theory was quickly dismissed on grounds that Shazam's strength in the advertising market is relatively low; and that users always remain free to choose not to receive any of the notifications in question.[17]

Yet perhaps the most elaborate theory of harm examined by the Commission has to do with the possible foreclosure of competing providers of ACR software solutions, including music recognition apps, by the adoption of two different types of strategies: first, by providing different levels of integration of ACR functionalities between Apple Music apps and competing digital music streaming apps; second, by leveraging of Apple's strong market position in other products or services, most notably in the hardware space.

The Commission rejects the first scenario, noting the existence of several alternative ACR providers, and endorsing the view gathered during the investigation that the concentration may have the positive effect of encouraging digital music distributors to partner with providers of ACR technology.[18]

As to the second scenario, the Commission acknowledges the theoretically possible impact on competition of the following three practices: (a) pre-installation of the Shazam app on Apple's PCs, smart mobile devices, and other platforms; (b) deeper integration of Shazam's app on Apple's products

and services; and (c) reduction of interoperability between Apple's products and services (and, specifically, Apple devices' microphone) and third parties ACR apps and software solution.[19] However, it finds the concerns not to be merger-specific, as there is already a partnership and integration is in place between Apple Siri and Shazam's ACR technology.[20]

Furthermore, preventing hardware integration by competing ACR software solutions providers would be against Apple's interest to have a multitude of apps in its ecosystem, ultimately affecting its competitiveness *vis à vis* other platforms.[21] In any case, the Commission rules out any likely competitive impact of such integration in light of the fact that the parties do not have a sufficiently strong position in the market, respectively, for ACR software solutions platforms and ACR software solutions.[22]

Author Opinion

This Decision offers food for thought to the ongoing discussion on the reform of competition law in a data-driven environment.[23] One takeaway is the difficulty of assessing market power in the presence of non-monetary pricing. The Commission also expresses discomfort in using market shares as a proxy for market power in fast-growing sectors characterized by frequent market entry and short innovation cycles,[24] while also noting that Shazam is not a startup company and there is no history of disruptive entry or innovation.[25] Absent from this discussion, however, is a hands-on examination of the ACR technology and business models, which could have arguably shed light on the relative quality of the products offered by competitors and the scope for entry.

First, the Decision only provides an introduction to the technology in question, distinguishing between fingerprinting and watermarking: in the former, quality depends on algorithms extracting recognizable data for audio signals and a large reference database, which is built upon the source fingerprints given by music labels and music streaming or download service providers and music aggregators. In the latter, quality depends on algorithms aimed at inserting data into the audio signal, and a smaller reference database that is likely to require closer cooperation with music publishers and record companies. While we are told that providers of ACR software solutions rely on both technologies, it appears difficult to assess the effects of the concentration without a clear picture of the relative importance of those algorithms and reference databases. This is disconcerting as ACR software solutions are destined to become crucial gatekeepers for the flow of information in the EU, particularly in light of recent legislative and policy proposals to require the adoption of on the installation of content recognition technologies to prevent the circulation of illegal content.

Second, a measurement of market power as the ability to reduce quality in this market can hardly overlook the significance of in-service advertising. This arguably implies the need for an assessment of the elasticity of demand in reaction to an increase in advertising, and of the frequency and intensity of advertising across providers of ACR software solutions. It is somewhat disappointing that, although the Commission perceives the existence of a problem with its estimation of market power, it fails to conduct the holistic inquiry that would enable it to reach more solid conclusions. This is all the more problematic considering that Shazam's limited market power was a core reason for dismissal of the second, third, and sixth of the above-mentioned theories of harm.

Another aspect worth noting in this Decision is the interaction of competition and other policy goals. Specifically, one of the concerns that led the Commission to open a second phase investigation was inextricably linked to data protection law: would it be possible for Apple to use information collected through Shazam in order to identify customers of Apple Music's rivals, and ultimately target them with

advertising or marketing campaigns? While data protection law does not *a priori* prevent such targeting, the assessment in that context depends on the specific conditions of processing of personal data, including its transparency and the safeguards available to data subjects.

The Commission did not conduct such detailed assessment, however,[26] which could potentially mean that by approving a concentration that raises data protection concerns it failed to fulfill its duty to protect EU Charter rights. For this reason, a welcome development in connection with this Decision is the effort by the European Data Protection Board to initiate inter-institutional dialogue, through an unprecedented statement issued during the investigation calling for the consideration of the data protection and privacy interests of individuals where one or more companies have accumulated "significant informational power."[27]

In line with recent initiatives by the European Data Protection Supervisor,[28] the Statement goes beyond data protection: it demands the assessment of "longer-term implications for the protection of *economic, data protection and consumer rights* whenever a significant merger is proposed, particularly in technology sectors of the economy."[29]

Whether the European Commission and other competition authorities are indeed ready to take that challenge remains to be seen. In this regard, it is worth exploring the suggestion made in the Statement that such assessment be "separate to and independent from, or integrated into, the competitive analysis." Should a digital rights impact assessment be one of the measures proposed in the reform package for competition law in the digital age? If so, what form should it take? Given the competition authorities' lack of competence in making data protection determinations, this would arguably require the institutionalization of a dedicated cooperation mechanism between digital regulators.[30]

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[2] Case N. COMP/M.8788–*Apple/Shazam*, Commission decision of 6/9/2018, available at http://ec.europa.eu/competition/mergers/cases/decisions/m8788_1279_3.pdf.

[3] See e.g. Case N. COMP/M.3440– *EDP/ENI/GDP*, Commission decision of 9/12/2004, available at http://ec.europa.eu/competition/mergers/cases/decisions/m3440_20041209_610_en.pdf; Case N. COMP/M.4731,

Google/DoubleClick, Commission decision of 11/03/2008, available at http://ec.europa.eu/competition/mergers/cases/decisions/m4731_20080311_20682_en.pdf; Case N. COMP/M.6314–*Telefónica UK/Vodafone UK/Everything Everywhere*, Commission decision of 04.09.2012, available at http://ec.europa.eu/competition/mergers/cases/decisions/m6314_20120904_20682_2898627_EN.pdf; Case N. COMP/M.7217– *Facebook/Whatsapp*, Commission decision of 3/10/2014, available at http://ec.europa.eu/competition/mergers/cases/decisions/m7217_20141003_20310_3962132_EN.pdf.

[4] Most notably: Case N. COMP/M.5232–*WPP/TMS*, Commission decision of 23/09/2008, available at http://ec.europa.eu/competition/mergers/cases/decisions/m5232_20080923_20212_ en.pdf; Case N. COMP/M. 4854–*TomTom/TeleAtlas*, Commission decision of 14/05/2008, available at http://ec.europa.eu/competition/mergers/cases/decisions/m4854_20080514_20682_en.pdf; Case N. COMP/M. 4942–*Nokia/Navteq*, Commission decision of 02/07/2008, available at http://ec.europa.eu/competition/mergers/cases/decisions/m4942_20080702_20682_en.pdf; Case N. COMP/M.5727–*Microsoft/Yahoo! Search Business*, Commission decision of 18/02/2010, available at http://ec.europa.eu/competition/mergers/cases/decisions/M5727_20100218_20310_261202_EN.pdf; Case N. COMP/M.8124–*Microsoft/Linkedin*, Commission decision of 6/12/2016 available at http://europa.eu/rapid/press- release_IP-16-4284_en.htm; Case N. COMP/M.8180– *Verizon/Yahoo*, Commission decision of 21/12/2016, available at http://europa.eu/rapid/ press-release_MEX-16-4491_en.htm; Case N. COMP/M.7813 – *Sanofi/Google/DMI JV*, Commission Decision of 23/2/2016, available at http://ec.europa.eu/competition/mergers/cases/decisions/m7813_479_2.pdf.

[5] See European Commission Press Release IP/18/3505, available at http://europa.eu/rapid/press-release_IP-18-3505_en.htm.

[6] Decision, paras 75-145.

[7] *Id.* paras. 178-180 and 182-184.

[8] *Id.* para 185.

[9] *Id.* para. 231.

[10] *Id*. para. 237.

[11] *Id*. paras. 246-258.

[12] *Id*. para. 245.

[13] *Id*. para. 286.

[14] This is supported by data that were not revealed in the publicly available non-confidential version of the Decision. See para. 291.

[15] *Id*. para. 292.

[16] *Id*. paras. 327-328.

[17] *Id*. para. 305-306.

[18] *Id*. paras. 310 and 344.

[19] *Id*. para. 336.

[20] *Id*. para. 342.

[21] *Id*. para. 339.

[22] *Id*. para. 347.

[23] See the call for contributions by the European Commission (http://ec.europa.eu/competition/scp19/), the U.S. Federal Trade Commission (https://www.ftc.gov/news-events/press-releases/2018/06/ftc-announces-hearings-competition-consumer-protection-21st); and the UK government (https://www.gov.uk/government/consultations/digital-competition-expert-panel-call-for-evidence).

[24] Decision, para.162.

[25] *Id*. paras. 163-164.

[26] The analysis contained in the Decision in this respect is limited to noting "without prejudice of the assessment by the competent data protection authorities" that Shazam's terms of service and privacy notice "appear to inform" on processing of the Customer Information collected by Shazam. See Decision, para. 231.

[27] European Data Protection Board, "Statement of the EDPB on the data protection impacts of economic concentration," available at https://edpb.europa.eu/sites/edpb/files/files/file1/edpb_statement_economic_concentration_en.pdf.

[28] See the initiatives listed at https://edps.europa.eu/data-protection/data-protection/reference-library/big-data-and-digital-clearing-house_en.

[29] European Data Protection Board, *Id.*

[30] See Nicolo Zingales, "Data Protection Considerations in EU Competition Law: Funnel or Straightjacket for Innovation?," (June 30, 2016); P. Nihoul & P. Van Cleynenbreugel, *The Role of Innovation in Competition Analysis*, (Edward Elgar, 2018 Forthcoming), available at SSRN: https://ssrn.com/abstract=3158008 or http://dx.doi.org/10.2139/ssrn.3158008.

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Comment

Between a rock and two hard places: WhatsApp at the crossroad of competition, data protection and consumer law

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A B S T R A C T

On 11 May 2017, the Italian antitrust and consumer protection authority (Autorità Garante della Concorrenza e del Mercato, or AGCM) adopted two decisions in its proceedings against WhatsApp. Both proceedings, initiated under the consumer protection mandate of AGCM, relate to WhatsApp's terms of service and privacy policy (together referred to as "ToS" hereinafter). In particular, one qualified as "unfair" and "aggressive" WhatsApp's process of obtaining user consent for its updated ToS, while the other established the unfairness of specific clauses of WhatsApp's ToS. This comment will address the former decision, while making reference to other proceedings opened against the consumer communication service or its mother company in relation to its latest ToS update.

1. Historical and regulatory background

WhatsApp's ToS update in August 2016 was a consequential one: the Californian company announced, buried in the fine print of several provisions it had introduced, that it would share certain data (including most notably the phone number through which users are identified) for marketing purposes and product improvement with its new mother company Facebook. This attracted the attention and concern of commentators[1] for a number of reasons. First, the new arrangement broke with WhatsApp's longstanding "no ads policy,"[2] which strictly rejected the use of advertising affirming that "when advertising is involved **you the user** are the product" (emphasis in the original). Secondly, many users felt betrayed also because WhatsApp, adding fuel to the fire, had committed after its acquisition by

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[1] See e.g. Dan Tynan, 'WhatsApp privacy backlash: Facebook angers users by harvesting their data', The Guardian (25 August 2016), https://www.theguardian.com/technology/2016/aug/25/whatsapp-backlash-facebook-data-privacy-users; Gennie Gebart, What Facebook and WhatsApp's Data Sharing Plans Really Mean for User Privacy', EFF Deeplinks (31 August 2016), https://www.eff.org/deeplinks/2016/08/what-facebook-and-whatsapps-data-sharing-plans-really-mean-user-privacy-0; Bryan Barret, 'WhatsApp's Privacy Cred Just Took a Big Hit', Wired (25 August 2016), https://www.wired.com/2016/08/whatsapp-privacy-facebook/.

[2] 'Why we don't sell ads', WhatsApp Blog (18 June 2012), https://blog.whatsapp.com/245/Why-we-dont-sell-ads?

http://dx.doi.org/10.1016/j.clsr.2017.05.018

Facebook in 2014 to change "nothing", stressing that there would have been no partnership with Facebook if that required a compromise on the core principles that define the company, its vision and its product.[3]

The ToS update was also particularly controversial since the assumption of continued adherence to WhatsApp's anti-advertising posture played at least some role in the antitrust clearance of the transaction. While the European Commission approved the concentration on different grounds (namely, the dynamic nature of the affected markets and the simultaneous use by consumers of multiple communication services), the investigation did consider the possibility that Facebook would collect data from WhatsApp users who are also on the social network.[4] Ultimately, however, this scenario was deemed unrealistic given that the required change in WhatsApp's privacy policy would likely generate a migration of users to other consumer communication services. In addition, the Commission gave some credence to the merging parties' argument that there would be major technical obstacles to matching a user profile across the two platforms – an argument which is buttressed by the supervened ToS update, and on which the Commission recently fined Facebook €110 million for providing inaccurate information in the course of the merger review.[5]

In the United States, although the proposed acquisition escaped antitrust challenge, a substantiated complaint by the Electronic Privacy Information Center (EPIC) and other civil society organizations[6] forced the Federal Trade Commission (FTC) to consider the hypothesis that WhatsApp would change its policy after Facebook's acquisition. FTC Director Jessica Rich responded writing a letter to the merging parties warning about the legal consequences of violating privacy promises.[7] The letter clarified that a company needs the *express consent* of consumers to be able to use data in a manner that is materially inconsistent with promises made at the time the data was collected, thus aligning the FTC position on the matter with the obligations laid out in the consent decree under which Facebook recently settled FTC charges of deception.[8] Unsurprisingly, in light of the discrepancy between the notion of "express consent" and the way in which the ToS update was communicated to WhatsApp users, a further complaint was filed by EPIC together with the Center for Digital Democracy just four days after the announcement of WhatsApp's ToS update. The FTC assured that it would "carefully review" the matter – but no formal action has been taken to date.[9]

Back to the other side of the Atlantic, the ToS update triggered a number of legal actions in the context of data protection law. In particular, in the first decision taken on the matter on 27 September 2016, the Hamburg Commissioner for Data Protection and Freedom of Information ordered Facebook to stop processing data of German WhatsApp users, due to the absence of an effective consent from WhatsApp users to the data sharing, and the lack of any alternative legal basis for doing so.[10] On the same day, the Italian data protection authority (hereinafter DPA) launched an investigation concerning WhatsApp's compliance with the purpose limitation principle, as well as to "whether the data of WhatsApp users that do not use Facebook will be disclosed to the Menlo Park company."[11]

Just a week later, the Spanish DPA opened its own investigation, probing Facebook specifically on the type of information exchanged received from WhatsApp, the purpose for which it is used, the period of retention, and the options that are offered to users to object.[12] At this point it became clear that, since the concern about Facebook's practices in relation to WhatsApp was shared by a number of data protection authorities, the case offered a perfect opportunity for joint action under the coordination of the Article 29 Working Party. On 26 October 2016, the Working Party issued a letter to the Menlo Park company detailing the general concern for "the validity of the users' consent [. . .] and the effectiveness of control mechanisms offered to users to exercise their rights", and announcing a coordinated action "to clarify those concerns and to ensure that the principles and rights set forth in European and national Data Protection laws are upheld in a consistent manner across the EU."[13] Following

[3] 'Facebook', WhatsApp blog (19 February 2014), https://blog.whatsapp.com/499/Facebook.

[4] European Commission, Press Release IP 14–1088, 3 October 2014, http://europa.eu/rapid/press-release_IP-14-1088_en.htm.

[5] European Commission, Press Release IP- 17- 1369, 18 May 2017, http://europa.eu/rapid/press-release_IP-17-1369_en.htm.

[6] *In the Matter of Facebook, Inc.*, (2009) (EPIC Complaint, Request for Investigation, Injunction, and Other Relief), https://epic.org/privacy/inrefacebook/EPIC-FacebookComplaint.pdf; *In the Matter of Facebook, Inc.*, (2010) (EPIC Supplemental Materials in Support of Pending Complaint and Request for Injunction, Request for Investigation and for Other Relief), https://epic.org/privacy/inrefacebook/EPIC_Facebook_Supp.pdf; *In the Matter of Facebook, Inc.*, (2010) (EPIC Complaint, Request for Investigation, Injunction, and Other Relief), https://epic.org/privacy/facebook/EPIC_FTC_FB_Complaint.pdf; *In re Facebook. Inc.*, Decision and Order, No. C-4365 (2012), available at http://www.ftc.gov/enforcementlcasesproceedings/092–3184/facebook-inc.

[7] Letter From Jessica L. Rich, Director of the Federal Trade Commission Bureau of Consumer Protection, to Erin Egan, Chief Privacy Officer, Facebook, and to Anne Hoge, General Counsel, WhatsApp Inc. (10 April 2014), available at https://www.ftc.gov/public-statements/2014/04/letter-jessica-l-rich-director-federal-trade-commission-bureau-consumer.

[8] FTC press release (10 August 2012), 'Facebook Must Obtain Consumers' Consent Before Sharing Their Information Beyond Established Privacy Settings', https://www.ftc.gov/news-events/press-releases/2011/11/facebook-settles-ftc-charges-it-deceived-consumers-failing-keep.

[9] *In the Matter of Facebook, Inc.*, (2016) (EPIC Request for Investigation, Injunction and Other Relief), https://www.epic.org/privacy/ftc/whatsapp/EPIC-CDD-FTC-WhatsApp-Complaint-2016.pdf.

[10] The Hamburg Commissioner for Data Protection and Freedom of Information, 'Administrative Order against the mass synchronization of data between Facebook and WhatsApp', Press Release 27.10.2016, available at https://docmia.com/d/504564.

[11] Garante per la protezione dei dati personali, 'Il Garante privacy avvia istruttoria su WhatsApp', Press Release 27.10.2016, http://www.garanteprivacy.it/web/guest/home/docweb/-/docweb-display/docweb/5460932.

[12] Agencia Española de Protección de Datos, 'La AEPD inicia actuaciones de investigación por la comunicación de datos entre Whatsapp y Facebook', Press Release 5.10.2016, http://www.agpd.es/portalwebAGPD/revista_prensa/revista_prensa/2016/notas_prensa/news/2016_10_05-ides-idphp.php.

[13] http://ec.europa.eu/justice/data-protection/article-29/documentation/other-document/files/2016/20161027__letter_of_the_chair_of_the_art_29_wp_whatsapp_en.pdf.

the letter, which also requested further information about the exact categories of data, the sources and a list of recipients and potential third parties, the UK Information Commissioner's Office publicly acknowledged to have received Facebook's commitment to suspend the transfer of data to Facebook from WhatsApp users within the UK,[14] a commitment extended by the communication service to the whole European Union territory.[15]

Finally, and most recently, Facebook was also brought before the Berlin County Court by German consumer protection association *Verbraucherzentrale Bundesverband* (VZBV), which requested an injunction to stop the data-sharing and ensure that Facebook deletes the data that WhatsApp has already transferred to it.[16]

2. Significance of the AGCM investigation

The above list of proceedings provides a good illustration of the highly controversial character of the changes introduced in August 2016. At the same time, it is striking that, despite the fact that issues such as changes of ToS clearly fall into the competence of consumer protection authorities, no action had so far been taken in this area in relation to the Facebook/WhatsApp's conduct. This is surprising when considering the high-profile nature of this case, arguably indicating a perceived inadequacy of consumer protection tools in addressing issues which present a significant overlap with privacy and data protection law. Yet it is clear that, as rightly stated by the AGCM in its decision[17] (para. 50), the applicability of privacy and data protection legislation to the conduct at issue does not exempt an undertaking from compliance with the law of unfair commercial practices.

To be clear, what the AGCM took issue with has nothing to do with the deceptive nature of WhatsApp's prior announcements, or even with the completeness of the information provided in the new ToS about the extent of data sharing. Rather, it was the form in which consumer consent was extracted for acceptance of the updated ToS, which according to the AGCM failed to fulfill WhatsApp's obligation under consumer protection law to provide an effective choice. The case thus represented an opportunity to address the interaction between consumer consent and data subject consent, but also (as explained below) to bring competition considerations into consumer protection analysis.

[14] Elizabeth Denham, 'Information Commissioner updates on WhatsApp / Facebook investigation', ICO Blog (7 November 2016), https://iconewsblog.wordpress.com/2016/11/07/information-commissioner-updates-on-whatsapp-facebook-investigation/.

[15] See Natasha Lomas, 'Facebook-WhatsApp data sharing now on pause in UK at regulator's request – and across Europe', Techcrunch (8 November 2016), https://techcrunch.com/2016/11/08/facebook-whatsapp-data-sharing-now-on-pause-in-uk-at-regulators-request/.

[16] See 'Vzbv sues Whatsapp', Marktwaechter Digitale Welt Press Release (30 January 2017), https://www.icpen.org/files/icpenDownloads/17_01_30_pm_whatsapp_klage_en.pdf.

[17] Provvedimento PS 10601 and Provvedimento CV 154, both available at http://www.agcm.it/stampa/comunicati/8754-ps10601-cv154-sanzione-da-3milioni-di-euro-per-whatsapp,-ha-indotto-gli-utenti-a-condividere-i-loro-dati-con-facebook.html.

3. Factual background

The facts at the origin of this dispute certainly did not escape the attention of those WhatsApp users who had been monitoring the communication service for possible changes following Facebook's acquisition. However, as it is clear from the AGCM's decision, the expectations of attention of an "average consumer" who is "reasonably circumspect" cannot be held to such high standard. To be clear, the notice received by consumers accessing the service on or after 25 August 2016 was merely the following:

> *WhatsApp is updating its terms of service and privacy policy to reflect new functionalities, such as WhatsApp calls. Read the terms and the policy to know more about the available options. To continue using WhatsApp, kindly accept the terms and the policy by [30 days after reading].*[18]

The message was followed by a sizeable "ACCEPT" button for users to express consent. While a user was not bound to accept the entirety of ToS (and in particular the sharing of data with Facebook) in order to continue using the service, no option was given in the first instance to make a partial acceptance of the new terms. To do that, one would need to click on the word "Read" in the aforementioned text, or alternatively on the sentence "To know more about the key updates of our Terms and Privacy Policy" included at the bottom of the text. Both actions would take a user to a new page featuring a pre-ticked checkbox next to a clause indicating that users share the information of their WhatsApp account with Facebook to improve their experience with Facebook's products and advertising. The same clause clarified that this information is limited to the users' metadata, assuring that in any event "chat and telephone number will not be shared on Facebook".

A user wishing not to share this information would then be required to untick the checkbox, and then click on the ensuing ACCEPT button. Alternatively, that user would have the option of de-activating the data sharing within 30 days of acceptance by unticking the checkbox "Share account information" in Settings > Account.

4. The decision

The AGCM found that WhatsApp's conduct constituted an unfair and aggressive commercial practice pursuant to articles 20, 24 and 25 of the Italian Consumer Code – the national implementation of the articles 5, 8 and 9 of Directive 2005/29. To reach that conclusion, the AGCM made a number of important points.

First, as already mentioned, the AGCM quickly disposed of the objection on subject matter jurisdiction, clarifying that the practice at issue did not affect the competence of the DPA. In

[18] An identical message was also sent to users who had not expressed their acceptance within 30 days, with the additional clarification that, should they fail to accept, they would have to interrupt their use of the services.

particular, the AGCM assuaged the concerns of interference with the mandate of DPAs by recognizing that, should any such authority claim exclusive or concurring competence on the matter, the AGCM would suspend its proceedings pursuant to article 27.1bis of the Consumer code. Interestingly, the cited article establishes that the AGCM exercises its jurisdiction on unfair commercial practice "also in regulated sectors" – supposedly interpreted by the authority as including privacy and data protection – "upon receiving the advisory opinion of the competent authority", which however did not materialize in this particular case. Nevertheless, since the practice was undertaken through electronic communications, the AGCM was specifically required by article 27.6 of the Code to obtain a preliminary opinion to the communications authority (Autorità per le Garanzie nelle Comunicazioni, or AGCOM). AGCOM's opinion, submitted on 4 May 2016, stressed the increasing importance of smartphone ecosystems in the digital economy (and more generally of the web for social interactions), pointing to the fact that Facebook Messenger and WhatsApp hold two of the top three positions in the market for instant messaging. AGCOM emphasized that the use of both smartphones and the Internet facilitate and significantly amplify the effects of the commercial practice under investigation, strengthening the undue influence on consumers in light of the widespread adoption of the services in question.

Another important element of contention was whether the conduct at issue falls within the scope of the consumer Code. Here, WhatsApp tried to argue that its main function is the transmission of messages between users (rather than advertising), hence the transfer of communication data to Facebook would not constitute a "commercial" practice. It recalled to that effect the recent opinions of the European Data Protection Supervisor (EDPS) refusing to accept the qualification of personal data as "mere economic asset" or as "counterperformance" to a contract.[19] However, AGCM dismissed this arguably misconstrued reference by pointing out that the use of data as counterperformance in social media is recognized in the context of both antitrust[20] and consumer protection law,[21] and that the company itself admitted that the introduced data sharing was conceived *inter alia* to improve advertising, generating financial gains for Facebook.

Finally, and more on the merits of the conduct under investigation, WhatsApp argued that there was none of the "harassment, coercion, or undue influence" elements required under article 25 of the Code for a practice to be considered "aggressive" in accordance with article 24. It contended that it had provided users with sufficient notice, in particular through an unavoidably full screen informing about the TOS update, and two additional informative pages which included even the summary of the main changes. The AGCM did not explicitly address these arguments, but concluded that the initial screen and the pre-ticked checkbox failed to adequately convey the possibility of refusing the data sharing with Facebook, and rendered difficult the concrete exercise of this option. It went on illustrating that a user would only be able to modify his selection through a more complex procedure, and that instructions to do so were only available in the second screen – the appearance of which was triggered only in the eventuality that a user decided to read more information about the ToS update. Furthermore, the AGCM took issue with the uncertainty about the continuation of the service, generated by the communications sent to users who did not express their acceptance within the initial 30 days of their use of WhatsApp.

A further interesting point concerns WhatsApp's claim that it had gone beyond the amount of information provided by other widely used mobile applications, and thus the "normal degree of specific competence and attention that consumers can reasonably expect from a professional" in accordance with article 20 of the Code. AGCM was not convinced by this argument either, in light of the significance of the commercial activity carried out and of the fact that the company (with 30–50 million users) represents an important player in the relevant national market.

For all these reasons, considering that the conduct significantly affected the freedom of choice or behavior of the average consumer and thereby led to a commercial decision that would not otherwise take place, the AGCM found the practice to be in violation of articles 20 (unfair commercial practice), 24 (aggressive commercial practice) and 25 (resort to "harassment, coercion or undue influence") of the Consumer Code.

5. Quantification of the fine

One of the issues that have given rise to much discussion following publication of this decision is the way in which AGCM calculated the €3 million fine imposed to WhatsApp for the aforementioned violations. Article 27.13 of the Code mentions a number of factors to be taken into account for quantification of the fines imposed by the AGCM pursuant to its consumer protection mandate.

The first one is the gravity of the infringement, which in the view of the authority was particularly serious because of the "insidious nature" of the extraction of consent to the use of data for profiling and advertising. One could argue that this qualification suggests a concern not merely of aggressiveness, but also of deception – a scenario that is regulated under article 22 of the Code and the AGCM did not address.

The second element was the characteristics of the professional in question, being of particular relevance that the undertaking was "leader" in a market that extends to the whole country (as pointed out by AGCOM), is dynamic and innovative and concerns the acquisition, exchange and use of relevant personal information which has substantial economic value. Here, while one can imagine that the authority meant to condemn what it deemed innovation by trickery, it would have

[19] Opinion 8/2016 on coherent enforcement of fundamental rights in the age of big data of 23 September 2016; and Opinion 4/2017 on the Proposal for a Directive on certain aspects concerning contracts for the supply of digital content" of 14 March 2017.

[20] Merger procedure, Case No. COMP/M.7217 – Facebook/WhatsApp, 3 ottobre 2014; 'Refining the EU merger control system', Speech by Commissioner Vestager, Studienvereinigung Kartellrecht, Brussels, 10 March 2016.

[21] Common position of national authorities within the CPC Network concerning the protection of consumers on social network, Brussels, 17 March 2017, http://europa.eu/rapid/press-release_IP-17-631_en.htm; Proposal of Directive 634/2015 on certain aspects concerning contracts for the supply of digital content, Brussels, 9 December 2015 COM(2015) 634 final, http://ec.europa.eu/justice/contract/files/directive_-digital_content.pdf.

arguably been preferable to explain more in detail the role played by innovation considerations towards the determination of the fine.

A third factor was the duration of the infringement, which AGCM found problematic given that users who had not accessed WhatsApp since 25 August 2016 were still subject to the practice in question. However, the authority did take into account one attenuating circumstance with respect to the mitigation of the effects of the practice, in particular that WhatsApp had stopped its transfer of data to Facebook within the European Union.

6. Comment

This is a sensible and well-reasoned decision applying traditional consumer law tools to a relatively novel concept of "commercial practice" (the acquisition of consumer data) which is also increasingly under the scrutiny of other regulators – most notably, competition and data protection authorities. Without doubt, the decision constitutes an important step towards the clarification of some needle questions, including the relevance of competition and data protection considerations in consumer law. This is an issue that was recently addressed at a rather general level by the European Commission's Guidance on Unfair Commercial Practices[22] in relation to both the aforementioned areas.

On data protection law, the Guidance stresses that "data protection violations should be considered when assessing the overall unfairness of commercial practices [. . .], particularly in the situation where the trader processes consumer data in violation of data protection requirements". Examples made in this respect are not particularly detailed, referring to the information requirement of data protection law and to the use of data for direct marketing purposes or *any* other commercial purposes like profiling, personal pricing or "big data applications". Nevertheless, they do point to the need to assess the legality of the practice from a data protection perspective, and the AGCM in this decision described the formal process in which this should take place (article 27.1bis).

On competition law, the Guidance explicitly indicates that breaches of competition rules should be taken into account when assessing unfairness under the unfair commercial practice directive, but failed to offer any concrete example of the interaction between these two regimes. In this respect, the analysis conducted by the AGCM is particularly instructive, incorporating market dynamics into crucial parts of the analysis.[23]

First, the determination of "undue influence" hinges significantly on a recognition of the company's position in the market. This resembles the assessment of market power for competition purposes, concluding that consumers use WhatsApp daily even in replacement of regular telephony, and therefore can hardly abandon it. Going forward, perhaps this type of assessment could be improved with a more structured analysis of market power, including for example measuring elasticity of demand and explicitly identifying other elements, such as countervailing buyer power and the notion of network effects which the AGCM seems to allude to. WhatsApp in its defense tried to raise one key element of the merger decision, the large incidence of "multi-homing" in the consumer communication market, but this point was not sufficient to mitigate the AGCM's recognition of the somewhat special position of WhatsApp as market leader. The understanding of the prominent position of WhatsApp, which evokes the concept of "special responsibility" of a dominant firm, permeates throughout the decision – including the quantification of the sanction. It also affects the degree of professional diligence and the information duties of the firm, a conclusion which could arguably be extended to data protection law under the fairness and accountability principles.

A second aspect where one can find resonance of competition principles is the assessment of abuse of this special position, in particular where it is recognized that company "leveraged" the heavy reliance of consumers on the application to obtain a "consent that is broader than necessary to continue using the application". While this is not exactly the classic "leveraging" theory, where one company uses its dominant position in one market to strengthen its position in another connected market, it might well be a necessary adaptation to the context of data-driven ecosystems, where data constitute an input for future market expansion. Alternatively, Facebook/WhatsApp's conduct can be seen through the prism of exploitation, as an imposition of "unfair trading conditions" in violation of article 102 (a) TFEU. If personal data is an asset which can be considered a counterperformance to a contract, then it is not too much of a stretch to expect that such data constitutes a fair price for the service offered, as recently noted by EU Competition Commissioner Margrethe Vestager.[24] This theory is not entirely new to Facebook, who is already subject to an investigation by the German competition authority for abusive imposition of unfair ToS.[25] The specific theory of harm on which the investigation is grounded has not been clearly spelled out, but it has transpired from the press release that there is considerable doubt about the validity of the ToS *in particular* under German data protection law (a hint that the issue might also be one of consent under

[22] Commission Staff Working Document, Guidance on Implementation/Application of Directive 2005/29/EC on Unfair Commercial Practices, Brussels, 25.5.2016, SWD(2016) 163 final, http://ec.europa.eu/justice/consumer-marketing/files/ucp_guidance_en.pdf.

[23] That is probably of no coincidence considering that rapporteur in this case was Gabriella Muscolo, well known in the antitrust community among other things due to her position – prior to taking the new role of AGCM Commissioner – as judge for the specialized IP and commercial courts in Rome, where she handled several competition cases. See http://www.agcm.it/collegio/componenti/48-organizzazione/collegio/6945-gabriella-muscolo-sp-1151980042.html.

[24] Margrethe Vestager, 'Making data work for us', Speech at Data Ethics event on Data as Power, Copenhagen, 9 September 2016, https://ec.europa.eu/commission/commissioners/2014-2019/vestager/announcements/making-data-work-us_en.

[25] Bundeskartellamt, 'Bundeskartellamt initiates proceeding against Facebook on suspicion of having abused its market power by infringing data protection rules', Press Release 02.3.2016, http://www.bundeskartellamt.de/SharedDocs/Meldung/EN/Pressemitteilungen/2016/02_03_2016_Facebook.html?nn=3591286.

consumer law) and that this might lead to an abuse under competition law if sufficiently connected with Facebook's market dominance. In particular, the authority ascribes to the notion of "special responsibility" of a dominant company the obligation to use adequate ToS "as far as these are relevant to the market", which suggests that lawfulness of ToS falls under antitrust scrutiny whenever they allow a company to engage in a practice that affects competition in the market. As the chairman Andreas Mundt points out, in a market financed by advertising such as the one Facebook is operating in, it is essential to examine whether the consumers are sufficiently informed about the type and extent of data collected.[26]

It goes without saying that assessing the adequacy of ToS under the standards of parallel legal regimes is no easy task for competition authorities, even if limited at determining whether the data provided are 'excessive' in relation to the economic value of the service provided.[27] This is why it is important that these determinations be made working in close contact with DPAs and consumer protection agencies – and where relevant with the European commission and the competition agencies of other EU member states.[28] For this reason, the proposal advanced by the EDPS for a "digital clearing house", made of contact points in authorities responsible for regulation of digital services, should be seriously considered to deal with the interaction of the three aforementioned bodies of law.[29] A continued inter-institutional dialogue can foster crosspollination and help bring more structure and predictability into this regulatory puzzle.

[26] *Id.*

[27] This is the basic standard applicable to gauge the fairness of a price under EU competition law, which requires examining whether (i) the price-cost margin is excessive and (ii) the price imposed "is either unfair in itself or when compared to competing products". See Case 27/76, *United Brands v Commission* [1978] ECR 207, paras. 250–252. Interestingly, the term "excessive" was also used recently by the Belgian DPA to refer to Facebook's data collection through cookies, social plug-ins and pixels. See Belgian Privacy Commission, Recommendation no. 03/2017 of 12 April 2017, available at https://www.privacycommission.be/sites/privacycommission/files/documents/recommendation_03_2017_0.pdf; and 'The Belgian Privacy Commission publishes new recommendation relating to the processing of personal data by Facebook through cookies, social plug-ins and pixels' (16.5.2017) at https://www.privacycommission.be/en/news/belgian-privacy-commission-publishes-new-recommendation-relating-processing-personal-data.

[28] This type of cooperation was explicitly acknowledged in the Bundeskartellamt's press release on the Facebook investigation, supra n. 25.

[29] Per EDPS proposal, the proposed activities of the Digital Clearing House would include: (1) discussing (but not allocating) the most appropriate legal regime for pursuing specific cases or complaints related to services online, especially for cross border cases where there is a possible violation of more than one legal framework, and identifying potential coordinated actions or awareness initiatives at European level which could stop or deter harmful practices; (2) using data protection and consumer protection standards to determine 'theories of harm' relevant to merger control cases and to cases of exploitative abuse as understood by competition law under Article 102 TFEU, with a view to developing guidance similar to what already exists for abusive exclusionary conduct; (3) discussing regulatory solutions for certain markets where personal data is a key input as an efficient alternative to legislation on digital markets which might stifle innovation; (4) assessing the impact on digital rights and interests of the individual of sanctions and remedies which are proposed to resolve specific cases; (5) generally identifying synergies and fostering cooperation between enforcement bodies and their mutual understanding of the applicable legal frameworks. See EDPS Opinion 8/2016 on coherent enforcement of fundamental rights in the age of big data of 23 September 2016, p. 15.