

Written Evidence to HM Treasury's 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 Waldfoegel, *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

advertising, and participation in a social experiment³ 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 source⁶ 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

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 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.

operating system as open source software. A final example of congruent innovation⁹ 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 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&D¹³ and undercut the existing pricing alternatives. To date, there are not many such scenarios. For example, UK's Arm Holdings¹⁴ 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

⁹ See Chaston (2015), 103.

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.

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 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

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.

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, 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

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 Drexler, '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.

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 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

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.

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 for gardening, airlines, hotels, and so on, which are also dominating local, regional, or neighbouring markets, offer loyalty cards²³ 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,

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 Bakhoun 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.

Apache Hadoop,²⁹ Revolution, and so on; and automated data that is a mix of data-driven and expert-derived rules to analyse big data.³⁰ Software packages act as intelligent agents that allow for quick automation³¹ 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

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.

³⁰ Finlay (2014), 63.

³¹ Chaston (2015), 211.

³² Finlay (2014), 27.

³³ Chaston (2015), 129.

information technology law and/or cyber/internet laws on fraud and computer related crimes.³⁴

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

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.

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.

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 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.

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, Massachusetts, 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.

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 Conspiracy: B2C	Geo-tracking of location data	Price discrimination on the basis of categories of customers	Socio-economic demographic data , i.e., income/salary data, past history of online purchases, loyalty cards etc.	Behavioural data , e.g., consumers' interests, likes and preferences.
Action	<u>New</u> 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. <u>New</u> 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.	<i>Ex-ante</i> 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

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.

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 unacceptably similar to a 'Big Brother surveillance' economic experiment⁴⁵ 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 (DoubleClick), 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.

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

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.

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 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

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.

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?

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.