

**Response to CMA Paper:
“Algorithms: How They Can Reduce Competition and Harm Consumers”**

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Introduction

I am a Senior Lecturer in Competition Law at the University of Manchester Law School. My past research has focused on collusion and competition. I write as an academic, and not as a representative of a business or consumer organisation. The views contained in this response are my own, and do not reflect the views of my institution. I have no interests which could influence or otherwise affect these views.

My responses to the questions set out in the call for information follow. There is nothing confidential in this response.

1. Are the potential harms set out in the review paper the right ones to focus on for our algorithms programme? Are there others that we have not covered that deserve attention?

1.1 Focusing on some of the harms mentioned in the review paper seem to be an inappropriate exercise for an agency with a consumer protection / competition mandate. Given the CMA’s existing mandate, it should focus only on those harms which reduce consumer welfare, or are otherwise directly harmful to consumers’ interests.

1.2 For instance the paper provides the example of Facebook’s use of algorithms to filter out hate speech (paragraph 2.92). While there is no doubt that such speech might constitute a social harm, the harm caused is not to social welfare or consumers’ direct interests. This form of harm seems outside of the CMA’s mandate, and should be the focus of other agencies’ efforts. I further that the CMA’s mandate not be expanded to include “dealing with” these sorts of harms. (There may be room for the CMA to work with these other agencies, when the CMA can provide expertise which adds value to the other agencies’ activities.) The subsequent discussion of online harms shows a possible opportunity for Ofcom and the CMA to work jointly on misleading information—with the CMA providing expertise on consumer harm.

1.3 Similarly, the harms associated with discrimination in offering goods and services (or the pricing of same) to (or among) people on the basis of protected characteristics (e.g. paragraphs 2.39 – 2.44) is also an area that may better fit into the mandate of other agencies (e.g. the EHRC). These harms, while they constitute a social harm, do not

appear directly affect consumer welfare or harm consumers' interest qua consumer. However, again the CMA may be able to work with these other agencies, given the CMA's expertise and consumer protection mandate.

1.4 The discussion of some (social, psychological, behavioural) harms associated with "recommendation and collaborative filtering systems" (paragraphs 2.27 – 2.29) identify a number of significant concerns. But, again, it is doubtful whether these should be a focus of an agency with the CMA's mandate, as these harms do not appear to directly affect consumer welfare.

2. Do you agree with how we have described each harm, and are there other examples that demonstrate them in addition to the examples we have included?

2.1 On the whole, most the descriptions are accurate. However, the descriptions of Personalised Pricing Harms and Predatory Pricing need to be improved.

2.2 Personalised Pricing Harms (Paragraphs 2.9 – 2.16)

There appears to be confusion among the types of price discrimination, and how they can be welfare enhancing or detracting. First degree price discrimination (personalised prices for an individual) appears to be the most harmful, from a consumer welfare perspective. This, if implemented correctly, is always welfare reducing, as first degree price discrimination is aimed at equating the offered price with the (individual's) reservation price, and thereby leaving that individual with no consumer surplus.

2.3 Second degree price discrimination (quantity discounts) can be welfare enhancing. A "12 for the price of 10" discount not only passes on the efficiencies obtained through making one large sale (as opposed to several smaller sales), but in so doing may encourage additional consumption and production; and with the advantages of economies of scale, this may bring down the price of each item, thereby benefitting all consumers of the product. However, there are circumstances in which these types of discounts can reduce competition. As noted in C-413/14 P *Intel* (para 137) these can be used as a means by which a dominant undertaking can impose an exclusivity obligation on its customers. This will have an exclusionary effect, thereby reducing or eliminating competition in a market.

2.4 Third degree price discrimination (use of a proxy to identify groups, and discriminating among groups, e.g. student or OAP discounts. This form of price discrimination uses a proxy (student or OAP status) as a measure of "willingness to pay" can be welfare producing by encourages the production of additional units (economies of scale) and if causes the price to drop (hence increasing consumer welfare). Further, to the extent that the "discounted" price underestimates a given consumer's willingness to pay, such discounts can be welfare enhancing for that consumer.

2.5 Predatory Pricing (Section 2.3.3)

The description of predatory pricing is inaccurate. In the EU and hence UK (given retained case law) the practice is a strategy conducted by a dominant undertaking for

the purposes of eliminating a competitor, involving pricing below average variable cost (AVC) or (in certain circumstances) between average total costs (ATC) and AVC. (See C-62/98 *AKZO* paras 71 – 72; C-333/94 *Tetra Pak II*; and C-202/07 *France Télécom*). In the US predatory pricing involves the further element of recoupment (*Brooke Group v Brown & Williamson Tobacco* 509 US 209, 221 -224 (1993)). Recoupment is not part of EU (hence UK) law: see C-202/07 P *France Télécom* paras 109 – 111.

2.6 The strategy described (paragraph 2.77: “... it is possible that incumbent firms may use similar data, algorithms and techniques for personalised pricing in order to identify and selectively target those customers most at risk of switching, or who are otherwise crucial to a new competitor...”) does not appear to (necessarily) be pricing below some measure of cost. The price may well be above cost, i.e. AVC (and therefore not an abuse), or a selective rebate. Both of these are compatible with the competition rules: on selective rebates, see C-209/10 *Post Danmark I*, paras 36 – 38, 40 and 45.

2.7 I can think of no further examples beyond those mentioned in the consultation document.

3. How likely and impactful are the identified harms now, and how might they evolve in the next few years?

3.1 There is a fair amount of evidence that algorithmic collusion can produce harm. By “algorithmic collusion,” I do not mean merely the sort of behaviour seen in the Posters¹ or *Eturas* cases, where the harm is obvious. (The algorithms in these cases are merely the means by which a non-algorithmic agreements were implemented: they are analogues to “burner phones” or “smoke filled rooms” of traditional cartels.) Rather, the harm is more invidious, because it tends to be concealed. Algorithms (particularly so-called “self-learning ones) can be programmed to interact in such a way that they seek raise their prices to a supracompetitive level. There is solid evidence from peer-

¹ CMA Decision, On Line Posters and Frames, Case 50223, 12 August 2016

reviewed academic evidence that this sort of tacit collusion is possible, and likely occurs in the market.^{2,3}

3.2 We do not know the extent of this harm, precisely because there have been insufficient opportunities to obtain the relevant information. This may be due to access issues (e.g. access to the algorithms and real data⁴) prerequisite to detailed study of this problem and its extent. However, given the real possibility of harm suggested by the academic literature on point, it would be foolhardy to assume that no problem could or does exist. With computing power (and data storage costs) becoming less expensive over time, one can only assume that such algorithms will be deployed to a greater extent over the next few years, the problem will worsen. It is significant to note that others pointed out that the need to use pricing algorithms to maintain a successful on-line store

² The review paper correctly cites Chen et al and Assad et al on this point; but see also Le Chen, Alan Mislove & Christo Wilson, *An Empirical Analysis of Algorithmic Pricing on Amazon Marketplace WWW2016* (Proceedings of the International World Wide Web Committee 2016, Montreal) and Emilio Calvano, et al, Artificial Intelligence, Algorithmic Pricing and Collusion (December 2018) CEPR Discussion Paper No. DP13405; available at SSRN: ssrn.com/abstract=3304991; Karsten Hansen, Kanishka Misra, and Mallesh Pai, Algorithmic collusion: Supra-Competitive Prices via Independent Algorithms (January 2020), CEPR Discussion Paper No. DP14372; available at SSRN: ssrn.com/abstract=3535457; and the recent and significant discussion in Janusz Meylahn and Arnoud den Boer, Learning to Collude in a Pricing Duopoly (December 1, 2020), available at SSRN: <https://ssrn.com/abstract=3741385> or <http://dx.doi.org/10.2139/ssrn.3741385>)

³ The Meylahn and den Boer piece (ibid) is important. Its significance is noted by its authors at p 5:

To the best of our knowledge, our work contains the first *theoretical performance guarantee* on tacit collusion in a hub-and-spoke scenario where both players use the same price algorithm. A convergence guarantee will make it arguably more likely that such an algorithm is implemented in practice, exacerbated by the fact that our algorithm also has a guarantee that prices converge to best-response in case the competitor is *not* willing to collude but plays according to a reaction function. Our analysis shows that collusion by self-learning price algorithms is not necessarily ‘science fiction’ but is in theory possible and therefore deserves to be thoughtfully considered by legal scholars and competition regulation authorities.

⁴ See, e.g. Javier Espinoza, “EU struggles to build antitrust case against Amazon” *Financial Times* (11 March 2021); available at: <https://www.ft.com/content/d5bb5ebb-87ef-4968-8ff5-76b3a215eefc>. Espinoza notes, “These people [“people with direct knowledge of the matter”] added that officials are also unlikely to be able to view the online retailer's proprietary code directly to build their case, owing to legal barriers around trade secrets.”

acts as an entry barrier.⁵ The existence of such a barrier drives a market for third-party algorithms.⁶ (In turn, because the parties are using identical or very similar algorithms, these can facilitate price coordination at a supracompetitive level.⁷) All of this will increase the problem in the future.

3.3 I would suggest that the harm will only increase over the next few years, and competition and consumer and competition regulators need to start considering how to address these questions as soon as possible.

3.4 I am also aware that there are some who would argue that there is no evidence of this harm.⁸ With respect, there appears to be an element of “if you can’t see it, it doesn’t exist” denial to this work, particularly in the face of the evidence and arguments to the contrary. Further, even if this evidence to the contrary overstates the problem, it still is evidence of a problem, and it would be foolhardy to assume that the problem will not worsen over time and / or that no action is necessary.

4. Are there specific examples that we should investigate further to consider whether they are particularly harmful and potentially breaching consumer or competition law?

4.1 Other than those mentioned in the literature (e.g. the Amazon “Buy Box”⁹), I cannot think of any.

5. Are there any examples of techniques that we should be aware of or that we should consider beyond those that we’ve outlined?

⁵ See Ariel Ezrachi and Maurice Stucke, *Virtual Competition: The Promise and Perils of the Algorithm-Driven Economy* (Harvard University Press 2016) p 73

⁶ An example is Prisync (<https://prisync.com/>), which advertises three levels of sophistication. Its most basic version updates prices four times a day for 100 products; its most sophisticated version (“Platinum”) offers marketplace price tracking and instant price change notification; and, for suppliers “Price Violation” and “Recommended Price” modules. Quicklizard (<https://www.quicklizard.com/>) is another such service.

⁷ Ibid p 48

⁸ See e.g. Cento Veljanovski, “Pricing Algorithms as Collusive Devices” (Case Associates, 6 July 2020, available at SSRN= 3644360 and his “Algorithmic Antitrust” (Case Associates, 27 June 2020, available at SSRN= 3644363), Ulrich Schwalbe “Algorithms, Machine Learning, and Collusion” (2018) 14 *Journal of Competition Law and Economics* 568–607 (<http://dx.doi.org/10.1093/joclec/nhz004>), K-U Kühn and S Tadelis, Algorithmic collusion (2017) Presentation prepared for CRESSE; available at:

http://www.cresse.info/uploadfiles/2017_sps5_pr2.pdf; and, T Schrepel, “Here’s why algorithms are NOT (really) a thing” *Concurrentialiste* May 2017 (online)

⁹ See Chen, Mislove and Wilson, n 2, p 5.

5.1 Save for the use the tools of and approaches from behavioural economics (see below Q8), I am not aware of any.

6. Are there other examples where competition or consumer agencies have interrogated algorithms that we have not included?

6.1 I am not aware of any.

7. Is the role of regulators in addressing the harms we set out in the paper feasible, effective and proportionate?

7.1 Some of the suggestions seem to involve “mission creep,” and go beyond the CMA’s existing consumer protection and competition enforcement mandate. I am of the opinion that the CMA should not set itself out to become the UK’s Algorithm Inspection and Enforcement Agency. However, if the CMA focuses its mission on investigating and addressing the harms to consumer welfare (from either a competition or consumer protection perspective) caused by algorithms, then this more limited mandate would be appropriate.

7.2 A concern I have is whether or not the CMA’s present set of regulatory tools and remedies is sufficient. The existing set may well need some supplementation. Perhaps it would be appropriate for the CMA to develop something akin to second and third pillars of the EU Commission’s digital tool box, i.e. “(2) possible ex-ante regulation of digital platforms, including additional requirements for those that play a gatekeeper role; and (3) a possible new competition tool to deal with structural competition problems across markets which cannot be tackled or addressed in the most effective manner on the basis of the current competition rules (e.g. preventing markets from tipping).” The second of these point may well address concerns about the use of pricing algorithms as entry barriers in on-line markets. (This need to use such pricing programmes drives a market for third party applications, which may be conducive to the formation of hub and spoke cartels or tacit collusion.) Alternatively, tools of the sort proposed by the “digital tool box” could be supplemented further to specifically deal with algorithms / big data and their associated problems.

8. Are there other ideas or approaches that we should consider as part of our role?

8.1 The discussion of ranking and dark patterns (paragraphs 2.49 – 2.60) may benefit by the application of insights gleaned from behavioural economics to “solving” these problems. Anchoring and framing heuristics, and status quo and availability bias are useful explanations of consumer conduct (and how undertakings use these to exploit consumers). Hence, insights from that discipline may inform how these issues can be addressed when algorithmically caused or facilitated.

8.2 There is a need for drafting in expertise in computer science to fully inform the understanding of how these algorithms work; but this seems to be implicitly assumed in the review paper.

8.3 The suggestions mentioned under “Formal investigations and remedies” as potential remedies are appropriate; but they will likely require an explicit statutory basis.

Questions 1 to 4 refer to Section 2 of the algorithms paper, questions 5 and 6 relate to Section 3 and questions 7 and 8 refer to Section 4.