

Commentary: Inefficiencies in Digital Advertising Markets: Evidence from the Field

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The Competition and Markets Authority (CMA) is the United Kingdom's primary competition and consumer authority. It is an independent, nonministerial government department responsible for carrying out investigations into mergers, markets, and regulated industries as well as enforcing competition and consumer law. The CMA's statutory duty is to promote competition, both within and outside the United Kingdom, for the benefit of consumers.

As described in Gordon et al. (2021, hereinafter Gordon et al.), the CMA carried out an in-depth review of online platforms and digital advertising in the United Kingdom between July 2019 and June 2020. In addition to considering the advances and benefits for consumers from online platforms and digital advertising, the review explored whether practices in those markets could have an adverse effect on consumers. It also considered what steps could be taken to remedy, mitigate, or prevent any adverse effects. The resulting report not only presented the CMA's findings but also made a series of recommendations to government to inform its deliberations on future regulatory structures for online markets in the United Kingdom (CMA 2020). The CMA's work on online platforms and digital advertising has sparked interest from a range of commentators and has already been used as the basis of articles making the case for competition enforcement against both Google and Facebook in the United States (e.g., Scott-Morton and Dinielli 2020).

Gordon et al. lists four areas of market inefficiency in digital ad markets—measurement of ad effectiveness, internal frictions, ad blocking, and ad fraud—and suggests that these areas have received less attention from various regulatory and competition reviews. In fact, the CMA did explicitly consider the theoretical and practical challenges of measuring ad effectiveness in the United Kingdom (see CMA 2020; Appendix O) as part of a broader analysis of the challenges of assessing and evaluating the quality of digital advertising. The CMA approached the assessment of the quality of digital advertising in terms of a process involving several discrete stages: (1)

verification: checking the viewability of the advertising, the context in which it was displayed, and identifying the potential for ad fraud; (2) attribution: tracking what actions the consumer took after being exposed to the ad; and (3) measuring effectiveness: did the advertising meet the campaign objectives the advertiser had set? For instance, did it produce an incremental uplift in sales?

On the key theoretical and methodological issues relating to measuring effectiveness, the CMA reached findings similar to Gordon et al. We also identified issues related to verification and attribution, which were relevant to the operation of digital advertising markets in the United Kingdom.

In this commentary, I begin by considering why measurement matters for effective competition in digital advertising markets. I then pick up from Gordon et al. and consider the extent to which the experimental techniques for the robust measurement of ad effectiveness proposed in that article have actually been adopted by U.K. advertisers. I present data collected by the CMA showing that the level of experimental testing being carried out in the United Kingdom is currently very low. In exploring why this is the case, I find that this is due to internal frictions (e.g., considerations of time and cost) rather than lack of access to data or deliberate actions on the part of the digital advertising platforms to impede measurement of ad effectiveness. I then discuss challenges related to the verification and attribution of digital advertising. Here, the CMA did find that lack of access to data and actions on the part of Facebook and Google were having an adverse impact on U.K. advertisers' ability to properly and independently evaluate the

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Table 1. Use of Conversion Lift Testing in the United Kingdom: Google and Facebook.

Year	Google Conversion Lift Tool		Facebook Conversion Lift Tool	
	Number of U.K. Advertisers	U.K. Ad Spend Tested	Number of U.K. Advertisers	U.K. Advertiser Spend Tested
2017	0–10	£100,000–£200,000	100–150	£10–£20 million
2018	30–40	£600,000–£700,000	900–1,000	£20–£30 million
2019	10–20	£400,000–£500,000	700–800	£40–£50 million

Notes: Exact numbers have been redacted for reasons of confidentiality. Source: Tables O.1 and O.3 of Appendix O (CMA 2020).

quality of the digital advertising inventory they were buying. I briefly summarize the CMA's recommendations to address these findings and to improve the functioning of digital advertising markets in the United Kingdom. Finally, I conclude with some suggestions as to where Gordon et al.'s research agenda could usefully be supplemented.

Why Does Digital Ad Measurement Matter?

Competition analysis often focuses on the supply side of a market—that is, the extent to which firms compete for customers. However, the CMA examined the issue of measuring the effectiveness of digital advertising from the perspective of whether advertisers were able to evaluate the quality of the digital advertising inventory they were buying. If advertisers are not able to measure ad effectiveness—as a dimension of quality—then they will not be able to make well-informed purchasing decisions, and this will undermine effective competition in digital advertising markets.

The CMA report starts from the position that advertising campaigns have the characteristics of experience goods (Nelson 1970). That is, it is possible to specify a clear set of objectives (e.g., in terms of reach, conversions) for a campaign up-front, but it is only possible to evaluate effectiveness after a campaign has been purchased and run. In theory, the availability of significant volumes of user-level data in relation to digital advertising and the ability to track subsequent purchasing behavior should mean that it is now possible to measure the effectiveness of digital advertising much more precisely compared with other advertising media. However, it could be argued that advertising campaigns are, in fact, credence goods in that even after the campaign has been run, in practice it remains difficult and costly to measure quality—and even then, the results may be imperfect.

The Use of Experiments to Measure the Effectiveness of Digital Advertising

I offer three main observations regarding measurement challenges in digital advertising markets. The first is that the CMA's discussions with advertisers and media agencies reveal that they recognize the importance of focusing on the *incremental* impact of advertising. Furthermore, they are also aware of the risks associated with standard observational methods outlined by Gordon et al., and they recognize the superiority of experimental

approaches and randomized control trials—often viewed as the “gold standard” of measuring the advertising effectiveness (Poynter, Cassidy, and Duckworth 2014).

The second observation is how closely the leading online platforms (i.e., Google and Facebook) have been involved in the academic research and the development of new experimental approaches and how quickly these platforms have made tools for carrying out experiments available to advertisers. For instance, both Google and Facebook offer “Conversion Lift” tools to measure the incremental impact of advertising using experimental methods. Google's Conversion Lift tool is based directly on the “Ghost Ads” methodology described in Johnson, Lewis, and Nubbemeyer (2017), and Facebook's equivalent tool is an intent-to-treat experimental approach. This speed of adoption is illustrated in that the first reference to the Ghost Ads methodology appears in Google's marketing literature in 2015 (Google 2015), indicating that a tool for advertisers was being developed in parallel with the developments in the academic research. The speed of adoption suggests that platforms saw a distinct competitive advantage in the ability to demonstrate the efficacy of advertising on their platforms to advertisers.

The third observation is that although advertisers report that they are aware of the measurement challenges and have the tools available to carry out robust measurements, the amount of advertising expenditure actually being exposed to experimental testing in the United Kingdom is very modest. Table 1 presents data on the number of U.K. advertisers using Google and Facebook's Conversion Lift tools over the period 2017–2019, together with the amount of advertising expenditure that has been subject to testing using these tools.

The modest levels of testing should be set against a backdrop of increasing digital advertising expenditures—the CMA estimated that Facebook accounted for over half of the £5.5 billion spent on online display advertising in the United Kingdom in 2019—and technological advances on user tools that make it easier to automate experiments. Clearly not all advertisers would make use of experimental approaches, as such approaches are only likely to be relevant to larger advertisers and, even then, principally for their larger, conversion-focused campaigns (as opposed to longer-term brand awareness campaigns). Furthermore, Google does not support the Conversion Lift tool on Google Search—its main product. Even so, the amounts being subject to testing are extremely modest.

Gordon et al. suggest that advertisers could make more use of experimentation across geographic areas. In fact, the CMA found that Google already appears to put an emphasis on geo-experiments—experimentation across geographic areas—as opposed to user-based experiments. For instance, Google is reported to have expertise in using geographical experiments to measure the causal impact of increased advertising (Owen and Launay 2016), and geo-experiments are now its standard tool for the causal measurement of online advertising (Chen and Au 2019).

As part of its review, the CMA asked Google for information on the extent to which U.K. advertisers were using geo-experiments instead of Conversion Lift testing. Although U.K. advertisers are using geo-experiments more than Conversion Lift tests, the scale of use still appears to be very modest. Google has countered this suggestion by arguing that advertisers could be carrying out geo-experiments independently of Google's geo-experiment tool.

Impediments to the Widespread Adoption of Experimental Testing

Following Simonov and Rao (2019), Gordon et al. (2021) suggest that internal frictions between, for example, the marketing and finance departments could be another source of inefficiency. Given that advertisers seem to be aware of the measurement challenges and that they have the tools available to them, the CMA was interested in understanding the range of factors—both external and internal—that could explain the modest amount of online advertising that was subject to experimental testing.

In terms of external factors, the data indicate that advertisers are running more user-level randomized control trials (RCTs) on Facebook than Google. This appears to be due to a clear understanding of the relative advantages that Facebook has over Google in this area. Gordon et al. (2019) described Facebook's ability to track users via its "single-user login" across devices and sessions as representing a significant measurement advantage over more common "cookie-based" approaches. The single-user login means that Facebook can not only associate all exposures and conversions across devices and sessions with a particular user but also maintain the integrity of the random assignment process that is crucial to an experimental approach. The ability to identify and track a user across different devices is critical because users might be exposed to advertising on one device (e.g., a mobile phone) and subsequently convert on a different one (e.g., a desktop computer); thus, Facebook's single-user login appears to give it an advantage in terms of measuring ad effectiveness. Indeed, one media agency described the Facebook platform as being the most advanced for RCT-based testing.

In terms of internal factors that could affect advertisers' propensity to make use of experiments, discussions with media agencies suggest that reasons why RCTs are not frequently deployed include (1) costs (i.e., advertisers want to maximize the amount of money going into the advertising itself); (2) lack

of time—advertisers need time to analyze and apply the insights from an RCT to other campaigns before carrying out retesting; (3) suitability—not all campaigns are suitable for RCTs (particularly branding campaigns); and (4) difficulties in carrying out RCTs outside of walled garden platforms.

In the course of its review, the CMA found that advertisers and agencies were aware of Blake, Nosko, and Tadelis's (2015) study, which raised the possibility that, under certain circumstances, digital advertising might actually be ineffective. As a result, one might have expected advertisers and agencies to be more interested in measuring ad effectiveness to ensure that their advertising budgets were being spent efficiently. However, discussions with agencies suggested that Blake, Nosko, and Tadelis's study is typically viewed as an outlier; instead, agencies emphasize that subsequent research had been able to demonstrate that digital advertising does have a positive impact on driving conversions—albeit at a more modest level than was perhaps originally claimed.

The evidence available to the CMA suggests that advertisers and agencies are aware that RCTs represent the "gold standard" in terms of measuring advertising effectiveness, and they have the tools and access to the data to carry them out. However, in practice, it seems that many regard them as just one of several "tools in the bag" for evaluating the effectiveness of an advertising campaign. The CMA's overall impression was that there is a wariness to relying heavily on any one single metric—whatever its academic credentials—and instead, advertisers and agencies prefer to triangulate across different metrics. As a result, they might make use of experimental approaches to test the effectiveness of a limited number of key campaigns, but they continue to use observational methods—albeit with caveats—as well as other proxies to assess the delivery of a campaign (e.g., click-through rate, cost per click, cost per action). Each approach (experimental and observational) is perceived as having pros and cons, and multiple stakeholders voiced the opinion to the CMA that there was "no single point of truth" when it came to measuring advertising effectiveness.

Concerns about Verification and Attribution

The CMA regarded the assessment and evaluation of the quality of digital advertising inventory as a process involving not only measurement of the advertising's effectiveness in terms of outcomes but also the verification and attribution of the delivery of the digital advertising. In its review, the CMA examined concerns that large platforms had the ability to obstruct or place restrictions on advertisers accessing and assessing the data they needed to make a proper, independent evaluation of verification and attribution of the advertising inventory they were purchasing. The CMA noted that there had historically been concerns about the misreporting of data, including data on viewability, by Facebook (Peterson 2017), together with concerns about brand safety (i.e., companies do not want their advertising to appear on websites with content at odds with their brands) in relation to Google.

In terms of attribution, the CMA noted concerns that actions by Google had already made attribution by third parties more difficult: for instance, no longer sharing DoubleClick user IDs. Google's proposals to block third-party cookies in its Chrome browser in the future could also make third-party attribution still more difficult because it will constrain the ability of independent analytics providers to track consumer behavior across different websites.

The CMA was concerned that if advertisers are unable to independently assess the relative merits of advertising across different platforms and are forced to rely on the measurement tools of platforms that had significant market power, then they could be overpaying for the advertising inventory supplied by those platforms and misallocating their advertising expenditure relative to other sources of supply. Furthermore, if advertisers are forced to rely on data and metrics provided by those platforms, it could hinder other platforms from demonstrating that they can offer a competitive alternative, thereby running the risk of undermining effective competition.

In the case of verification for viewability and brand safety purposes, the CMA found that large, walled garden platforms such as Google and Facebook did have the ability to obstruct or place unnecessary restrictions on the advertiser's ability to access the data needed to carry out a proper, independent evaluation of the advertising inventory owned by those platforms. It was not clear to the CMA whether the data involved in verification of viewability and brand safety had to include personal data. For instance, the CMA understood that for viewability, verification involved determining whether the ad was served; whether the ad appeared on the screen; how much of the ad appeared on the screen; for how long the ad appeared on the screen; and, if the ad was a video, whether and how long the ad played and whether the sound was on.

The CMA found that, by restricting full independent verification of their own inventory, Facebook and Google had introduced a degree of opacity into the buying and selling of advertising of their own inventory. It is clear that the buying and selling of display advertising is already a complex process and platforms introducing additional restrictions on access to data will add to the "friction" in terms of evaluating market outcomes.

In the case of attribution, there were two related concerns about the exploitation of market power. First, platforms were removing or preventing access to the underlying user data necessary for attribution, which made it more difficult for third parties to implement their own attribution solutions. Second, and in parallel, platforms were increasing customers' reliance on the analytical products and services the platforms themselves offered. Without the ability to carry out independent attribution, there is a risk that advertisers are tied to using Google and Facebook's own evaluation tools. As a result, they could be paying higher prices for advertising purchased from those platforms and so misallocating ad spend relative to other sources of supply.

The CMA noted that Facebook and Google (and others) have made available services such as data "clean rooms" to

advertisers to allow them to analyze campaign performance in a controlled environment. However, feedback from media buying agencies indicates that this form of data analysis is still a nascent area. At present, the use such services by advertisers appears to be very limited, and there are concerns that it is not possible to carry out analysis at the level of individual users. The ability to extract data from the "clean room" environments is also considered a constraint on the usage of this tool.

Recommendations and Future Research

The CMA's analysis of digital advertising markets in the United Kingdom highlighted several areas where the operation of competition did not appear to be as effective as it could be owing to actions by the major platforms. Together with a range of other concerns about the entrenched market position of major platforms funded by digital advertising (e.g., Google, Facebook), this led the CMA to recommend a new, procompetition regulatory regime to govern the behavior of such platforms. The intention was to address the concerns about the current position of digital advertising platforms while promoting more competitive outcomes.

The CMA has proposed that a new regulatory body in the form of the Digital Markets Unit (DMU) should have the ability to ensure that platforms with market power, such as Google and Facebook, do not engage in exploitative or exclusionary practices or use practices likely to reduce trust and transparency; in addition, the DMU should have the authority to impose financial penalties if necessary. This would involve a mandated Code of Conduct involving three high-level objectives that the platforms would have to meet: (1) the Fair Trading objective addresses concerns about exploitative behavior on the part of the regulated platforms, (2) the Open Choice objective addresses the potential for exclusionary behavior, and (3) the Trust and Transparency objective ensures that regulated platforms provide sufficient information to users so they are able to make informed choices. Under the Trust and Transparency objective, the CMA specifically recommended that platforms that were subject to regulation should allow advertisers access to the data and tools necessary to allow for independent third-party verification of viewability and brand safety on the platforms' owned and operated inventory. The CMA also suggested that the DMU should have the power to make specific interventions related to the sharing of data to address competition concerns and to improve the efficiency of digital advertising.

The CMA's review has highlighted the importance of advertisers' access to data to independently evaluate the effectiveness of their digital advertising on an ongoing basis to support the operation of effective competition in digital advertising markets. Building on the CMA's findings, and to better understand issue on the demand side of digital advertising markets, the extensive research agenda in Gordon et al. (2021) could usefully be supplemented with further research to explore whether there are significant differences in outcomes across countries. For instance, are there significant differences in the

adoption of experimental testing between the United Kingdom and the United States? Or is the experience in the United Kingdom common to other countries? If there are differences, what are the factors—either internal or external to the firm—that drive those outcomes? Do U.S. advertisers face similar issues in relation to independent verification for viewability and brand safety purposes as U.K. advertisers? Are there examples of countries where advertisers believe they have access to sufficient data to make robust, informed assessments of the effectiveness of digital advertising? If so, is that experience easily transferable to other countries? These and similar questions could shed further light on this important topic for marketers, for the competitiveness of digital advertising markets and for the benefit of consumer welfare.

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