

BIG DATA AND ONLINE ADVERTISING: EMERGING COMPETITION CONCERNS



BY HON. KATHERINE B. FORREST (FMR.)¹



¹ Katherine B. Forrest is a former U.S. District Judge for the Southern District of New York and former Deputy Assistant Attorney General in the Antitrust Division of the U.S. Department of Justice. She is currently a partner at Cravath, Swaine & Moore LLP. The views expressed herein are solely the personal views of the author and do not represent the views of the Firm or legal advice.

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Public Goods, Private Information: Providing an Interesting Internet

By J. Howard Beales III



What *Times-Picayune* Tells Us About the Antitrust Analysis of Attention Platforms

By David S. Evans



Online Advertising and Antitrust: Network Effects, Switching Costs, and Data as an Essential Facility

By Catherine E. Tucker



Attention Oligopoly: Comments on the Paper by Prat & Valletti

By David Parker & Federico Bruni



Competition in Display Ad Technology: A Retrospective Look at *Google/DoubleClick* and *Google/Admob*

By Dan Bitton, David Pearl, Maurits Dolmans & Henry Mostyn



Advertising as Monopolization in the Information Age

By Ramsi A. Woodcock



A New Digital Social Contract to Encourage Internet Competition

By Dipayan Ghosh



From Demoting To Squashing? Competitive Issues Related to Algorithmic Corrections: An Application to the Search Advertising Sector

By Frédéric Marty



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I. INTRODUCTION

The informational capabilities and utility of Big Data — defined as large data sets capturing broad and deep information — are fundamentally altering the theory and practice of competition policy and law. While there is nothing novel about restrictions on inter-firm exchange of competitively sensitive information, Big Data allows for advertent and inadvertent sharing at scales not previously available. We have long known that horizontally competing firms cannot share customer or pricing information with impunity. This has always been so — and has long informed antitrust policy and practice. We also have known that firms in possession of unique or essential inputs may be subject to particular competition law scrutiny; or how firms with what one may characterize as market power may act in certain contexts may also be subject to particular scrutiny. Big Data provides tools and capabilities for firms that enable efficient conduct, but also may disadvantage rivals. The landscape enabled by Big Data has revealed emerging competitive concerns.

It is now clear that Big Data has fundamentally altered the scale and velocity of information acquisition and the analytic capabilities to manipulate it.² Firms with vastly expanded informational access have an enhanced ability to use such access to create competitive efficiencies as well as use it for more questionable competitive interactions. The breadth of information now available adds a critical new dimension to our analysis of such interactions: the tried and true frameworks of price and output are inadequate to present a comprehensive understanding of competitive conditions and/or firm conduct. The competitive implications of Big Data are real — and may go unrecognized by firms having particularly deep access. Firms may perceive their access and ability to manipulate vast data sets as simply a fortunate development — the march of technological progress. And, without malice aforethought, such a firm may engage in conduct that runs afoul of basic principles of antitrust law. This is becoming especially clear in the online advertising arena, where Big Data and advanced analytics have had an enormous impact. Indeed, in the fall of 2018, multiple antitrust investigations into Amazon's business practices were opened in Europe, and there has been increased scrutiny of large technology com-

² In a 2016 lecture at the Fordham Competition Law Institute, former Federal Trade Commission (“FTC”) Chairwoman Edith Ramirez referred to the “three Vs” of Big Data: volume, velocity, and veracity. Edith Ramirez, Chairwoman, Fed. Trade Comm’n, Keynote Remarks at the 43rd Annual Conference on International Antitrust Law and Policy: Deconstructing the Antitrust Implications of Big Data (Sept. 22, 2016) (available at: https://www.ftc.gov/system/files/documents/public_statements/1000913/ramirez_fordham_speech_2016.pdf).

panies in the United States.³

Setting policy or advising clients in this emerging competitive environment requires a multi-dimensional approach — one that takes into consideration that informational access allows for firm-specific economic efficiencies, but may also lead to conduct that can have the effect of manipulating market dynamics. This article offers a layered analytical approach that considers how this growth in informational access needs to figure into antitrust considerations, and lays out two basic premises.

The first premise is that a firm's data and its algorithmic ability to analyze such data — including that which it has, but equally importantly, that which it can get — are themselves products, multi-faceted commodities that exist independently of the firm's more traditional products and services. The data which a firm has, or to which it can gain access, may or may not derive from the manufacturing of its special widget or creation of service offerings. This could raise competition concerns, because a firm's possession of Big Data might actually expand its conceived market power, or shift the firm into a different market than it was traditionally in.

The second premise is that most firms today consider all manner of data harvested from their own conduct or acquired from a third party as, so to speak, “born in wedlock,” and thus necessarily lawful and unproblematic. That is, firms expect that data they possess may be put to any use; and that includes data that they are able to publicly acquire from firms trading in Big Data sets pertinent to one or more industries or populations. However, this also raises competition concerns, as we have seen — and continue to see — in the increased scrutiny of Big Data.

Data itself has, thus, quietly become a competitive force within all firms, and its usage is capable of causing anything from ripples to waves to tsunamis in market conditions. You might think of it this way: when analyzing a firm's products and its lines of business, it is time to consider not only what comes off the manufacturing line, but the information — the large data sets — that may be generated, available, or used anywhere in or by the firm.

Today, the digital ability to capture and process such information may have little to do with product characteristics, a firm's unit sales, or customer lists. Instead, a harvestable data set might include whether customers in particular zip codes are sophisticated or unsophisticated purchasers, whether they engaged in meaningful comparison shopping and if so, with which competitors, and whether those competitors offer substitutable widgets to the same customers in the same geographic area, with the same or similar terms and conditions. On the one hand, information can provide an extraordinary opportunity for efficient firm conduct; on the other, it carries known and unrecognized risks: it may be used to disrupt a well-functioning competitive process.

The article will first define “Big Data” and discuss specific areas of competitive concern, including online advertising. Then, it will offer a new definition of consumer welfare that takes information issues into consideration, and suggest redefinitions of product markets and market power. Finally, it will describe potential impacts on competitive effects and exclusionary conduct.

II. DEFINING BIG DATA FOR PURPOSES OF COMPETITIVE IMPACT

Conceptually and practically, Big Data is the digital capture of vast quantities of information capable of algorithmic manipulation. Such information may include details about any firm that interacts with buyers, sellers, or supply chain participants in a digitally-networked manner; it similarly includes any and all information about the digitally-networked conduct of a single person, household, or population segment. It is not only current information, but also historical information converted to or maintained in a digital and algorithmically accessible format. It can include domestic or international data specific to an industry or generalized to the economy. Critically, algorithmic manipulation allows such data sets to be accessed and queried; the days of data “snapshots” or sampling are coming to an end.

³ In September, 2018, the European Union opened an investigation into Amazon.com, Inc., examining the company's business practices, and specifically, whether “Amazon earned a competitive advantage from the data it collected from merchants and transactions on its platform.” Sara Germano, *Germany Opens Amazon Antitrust Probe, Adding to European Scrutiny*, WSJ.COM (Nov. 29, 2018, 10:50 AM), <https://www.wsj.com/articles/germany-opens-amazon-antitrust-probe-adding-to-european-scrutiny-1543491840>. In November, Germany's Federal Cartel Office opened a similar investigation, examining Amazon's effects on the German marketplace. *Id.* In the fall of 2018 into winter 2019, the FTC held a series of hearings (“Hearings on Competition and Consumer Protection in the 21st Century”) on the topics of Big Data and competition, consumer protection and privacy and enforcement priorities. FEDERAL TRADE COMMISSION, HEARINGS ON COMPETITION AND CONSUMER PROTECTION IN THE 21ST CENTURY, <https://www.ftc.gov/policy/hearings-competition-consumer-protection> (last visited Feb. 2, 2019).

The competitive utility of such data has unimaginable breadth. It can render competitive or anticompetitive conduct both easier and harder to detect; and, as much of its value derives from processes occurring within servers and as the result of algorithmic manipulations, it is a machine and not human-driven role. Big meetings in conference rooms are unnecessary and even unhelpful. Informational exchange and usage is rendered incredibly quick, automatic, and nearly self-executing.

Questions may be asked of any data set — and those questions may be the simple ones we imagine: does this industry or set of firms, this population of consumers, this household, this person, acquire, want to acquire, or can he or she be made to acquire, X product? Will that firm or person pay a particular price based on prior purchasing patterns? Do those patterns rely on the customer base of a firm, or the demographic characteristics of consumers? The questions may also be more complex: is this population likely to want, need, or be receptive to a product or service no one has ever heard of? Is there any “must have” data for firms seeking to achieve a significant position in this area? Is exclusionary conduct relating to data access lawful? Let me provide a few examples of the utility of acquired or harvested and analytically manipulated data sets. I’ll start with a few that are more obvious and then move to several of a newer vintage.

First, a firm’s unparalleled access to data enables targeted advertising at a level that allows the firm to know more about us than many of the people closest to us. This advertising has the potential to create demand through manipulated, perceived need.⁴ In addition, a firm’s unparalleled access to data can further enable it to obtain an unerring first mover advantage in new product areas based on predictive modeling. It allows a firm to achieve or maintain a competitive advantage, even dominance, by tying other firms or consumers to “sticky” experiences (think Facebook, LinkedIn, Amazon, Apple, Uber, but also other platforms).

Access to data allows a firm to engage in price discrimination at a sophisticated level based on known and predictive buying patterns.⁵ Big Data allows consumer-directed price discrimination differentiating between demographics as well as those exhibiting certain buying patterns, or between those with varying digital presences. In short, different prices can be presented simultaneously to different market participants.

Finally, it allows a firm to gain unparalleled insight into purchasing patterns and to the prices a buyer has paid or is likely to consider paying.⁶ It allows a firm to create a market opportunity or enter a market early and dominate in areas in which that firm did not traditionally compete (thus rendering firms with data access into all manner of nascent competitors). It allows a firm to observe, analyze, and act on incremental pricing behavior, in a way that is similar to that of flash securities traders. It allows a firm to provide data on an exclusive basis to a firm that may acquire it simply to shelve it. It allows a firm to engage in price fixing through “understandings” gleaned from digital knowledge heretofore unattainable. For instance, a firm may be technically able to observe numerous diverse price elements through machine-related processes and determine or predict prices charged by other market participants through algorithmic processing; conforming pricing under these circumstances could well be problematic.

III. REDEFINING CONSUMER WELFARE

The potential economic utility of Big Data — both good and bad — pushes us to redefine consumer welfare. For the purposes of this article, let me describe consumer welfare as a consumer’s ability to acquire goods or services based on market forces free from unreasonable external manipulation. Such an ability provides consumers with fair access to available goods and services that are necessary to and/or enhance their quality of life.

Competition policy and law is premised on a view that maintaining robust competitive conditions between firms, in which exclusionary behavior is discouraged and even penalized and in which dominance is controlled or prevented when possible (and carefully monitored when naturally occurring or nascent), enhances consumer welfare. In an era in which data can heavily influence or even control firm conduct or consumer behavior, observed price and output effects are no longer the only factors by which to analyze competition and consumer welfare.

4 See generally, SALESFORCE RESEARCH, DIGITAL ADVERTISING 2020 (2018), available at https://c1.sfdcstatic.com/content/dam/web/en_us/www/assets/pdf/datasheets/digital-advertising-2020.pdf.

5 See generally, MCKINSEY & COMPANY, MARKETING & SALES, BIG DATA, ANALYTICS, AND THE FUTURE OF MARKETING AND SALES (Mar. 2015), available at <https://www.mckinsey.com/~media/McKinsey/Business%20Functions/Marketing%20and%20Sales/Our%20Insights/EBook%20Big%20data%20analytics%20and%20the%20future%20of%20marketing%20sales/Big-Data-eBook.ashx>.

6 MCKINSEY & COMPANY, *supra* note 5.

Observed price alone may obscure an array of behind-the-scenes conduct that is increasingly sophisticated, enabling discrimination at granular levels, and that can be exchanged in non-traditional ways. Thus, using observed price and output effects to define the parameters of conduct that is welfare-enhancing or harmful no longer has the same utility it once did. An additional driver, how firms can and do acquire, collect, use, and trade in vast quantities of information, must also be recognized as directly impacting on consumer welfare.

This article offers a revised definition of consumer welfare that takes into account issues relating to the competition implications of Big Data. What it suggests is that we must understand consumer welfare and the health of the competitive process as including freedom from unreasonable manipulation of captive data sets. Algorithmic data manipulation that reduces free market decision-making reduces overall welfare. To be clear, access to data is often welfare enhancing — we depend on it for well-functioning markets. However, since Big Data has potentially manipulative effects, one must consider whether particular uses of it impact consumer welfare.

Two additional examples of Big Data's potential impact on consumer welfare are instructive. The first is that use of data by a firm that has deep access, inherent network effects, and dominant market position (think Amazon, Facebook, or LinkedIn) may inhibit new entry.⁷ Consumer welfare may be harmed when data is harvested, analyzed, and used in a manner intended to or having the effect of precluding competitive choice or creating such networked attachment that consumers no longer have a real ability to engage in freely-chosen purchasing behavior.

Another example of welfare-reducing conduct is, as previewed above, granular and highly sophisticated price discrimination based on a known demographic or a willingness to share data in exchange for price effects. In this regard, consumers with a robust digital presence may have different pricing options than those without — leading to data-driven consumer “leave behind” or “jump ahead.”

Current literature touches on some of these issues — framing them differently in important ways — as incursions on consumer privacy. No doubt privacy issues carry impacts on consumers — many negative. But in terms of competition law, the question for right now is how Big Data may manipulate firm and consumer interactions with the marketplace for goods and services.

There are emerging differences as well in how the United States and Europe are approaching Big Data and antitrust issues, as mentioned briefly above. Europe, for example, is moving towards increased data privacy. Approved and adopted by the European Union's parliament in 2016, the General Data Protection Regulation (“GDPR”) came into effect in 2018. This regulation requires strict rules on possessing and controlling personal information, and requires stronger conditions for customer consent.⁸

Now, lest this article convey a solely negative picture, let me be clear that Big Data has welfare enhancing aspects. For instance, a positive effect could be identifying product characteristics consumers find most useful, or anticipating and avoiding supply chain bottlenecks that allow smooth maintenance of output levels and price equilibrium. Of course, there are also enormous health impacts that Big Data can have: identifying epidemiological issues, responses and the like.⁹ Pharmaceutical companies surely find these of great interest.

7 According to one study published in 2018, “by 2019 66% of digital advertising spend will go to Google Search, YouTube, Facebook, and Instagram. Taken together these channels represent 63% of total spend in North America, 67% in the Asia-Pacific region, and 69% in Europe.” Louis Columbus, *Analytics Are Defining The Future of Digital Advertising*, FORBES.COM (Jan. 18, 2018, 8:34 PM), <https://www.forbes.com/sites/louiscolumbus/2018/01/18/analytics-are-defining-the-future-of-digital-advertising/#4e65518d786f>. See also Leonid Bershidsky, *The Digital Ad Market Is Overdue for Antitrust Review*, Bloomberg Opinion (Dec. 5, 2018, 1:01 AM), <https://www.bloomberg.com/opinion/articles/2018-12-05/amazon-google-facebook-are-ripe-for-a-european-antitrust-review> (discussing how a lack of new entry into the digital advertising business may be a symptom of market failure).

8 See generally EU GDPR.ORG, <https://eugdpr.org/> (last visited 2/24/19).

9 See generally Bernard Marr, *How Big Data is Changing Healthcare*, FORBES.COM (Apr. 21, 2015, 10:50 AM), <https://www.forbes.com/sites/bernardmarr/2015/04/21/how-big-data-is-changing-healthcare/#290e9f302873>.

IV. REDEFINING PRODUCT MARKETS AND MARKET POWER

Once we redefine consumer welfare, we must carry the implications of that definition through to conceptualizing what constitutes a competitive effect. Traditionally, the existence or impact of competitive effects is correlated to a firm's position in the market: does the firm have sufficient market power to create or enhance a welfare-reducing market condition? In the world we now inhabit, when data sets allow for unseen but real manipulative impact on competition and consumer welfare, the concept of market power also needs redefinition. Is it still appropriate to define market power or dominance in relation to interchangeable products, when a firm's real competitive impact is based instead on how it manipulates data? Firms with the capacity to harvest and utilize Big Data now have two products: their nominal one (for example, the widgets they manufacture), and their data set and related processes for algorithmic analysis. A competitor group therefore encompasses not only those engaged in making or providing substitutable goods or services, but those who have or possess similar data sets or analytic capacities. In this regard, the potential commoditization of a data set works as a proxy to define a competitive universe.

This definition means that what used to be a single-product firm now has another product line: its data and analytic capabilities. Thus, firms that might not traditionally be considered competitors may find themselves in competition with each other.

What does this mean? It means that defining markets based on manufactured products may be insufficient, and therefore that measuring competitive effects based on price and output may similarly be insufficient. An anticompetitive effect thus includes data manipulation that has a defined ability to unreasonably impact market behavior. This article is not suggesting the abandonment of price or output analyses to measure competitive effects. But, in this informationally-driven world, price and output analyses are no longer sufficient measures to define market impact.

In theory as well as practical application, what constitutes economically efficient behavior — what is procompetitive — must also evolve. A firm's decision to follow a path to making more and better widgets, expanding market reach, or improving quality, is only a piece of what will improve that firm's overall competitive prospects and what will create market efficiencies. Modeling firm conduct that is categorized as economically rational or irrational should now include analyses of how a firm's data has been effectively harvested and used.

V. REDEFINING POTENTIAL IMPACTS ON COMPETITIVE EFFECTS AND EXCLUSIONARY CONDUCT

In our redesigned framework, individual or collective firm conduct that seeks to utilize data to reduce independent decision-making, create unparalleled dominance, or preclude timely and effective entry, would be subject to scrutiny and potential redress. Exclusionary conduct that prevents wide access to certain data sets, however, may not be the real problem, and therefore more access may not provide the real solution. I do not view data itself as an essential facility; on the other hand, the algorithm through which it is run, and the mining techniques applied to it, may be. With all of this said, non-exclusive access to algorithms is not necessarily the best solution. In this context, non-exclusivity may act to proliferate rather than reduce market manipulation.

VI. PRACTICAL ISSUES

Let us turn now to certain practical questions: what implications, if any, does all of this have for policy and practitioners? Critically, when regulators, policy makers, and advisors are analyzing firm behavior, the concept of what may harm or help ensure robust competition and best serve consumers, needs to expand. For example, we must ask:

First, in what ways can firms cause anticompetitive price effects through data manipulation? Second, in what ways is price discrimination an acceptable or unacceptable market outcome of data manipulation? Third, what are the competitive implications for firms in one line of business to share non-price, and non-output-related data sets? Fourth, how do we include an analysis of informational access and manipulation in merger analysis? For instance, what role does it play in the merger of firms that previously would have been considered non-horizontal competitors, but that we now recognize as having complementary data sets and strong analytical capabilities?

Let me end with a few final practical points. Firms increasingly and appropriately recognize data as a crown jewel. Elevating data to such status informs strategic decision making in terms of acquisition, harvesting, and use. Regulators need to understand and think through the implications of this, and ensure that regulation does not deprive customers of Big Data's benefits. The speed at which all of this is moving challenges legislative and regulatory processes. Separately, firms may want to consider self-policing in the form of codes of conduct. Such codes could, for instance, recognize, that data manipulation can negatively impact free market competition.

VII. CONCLUSION

In conclusion, we are at an inflection point that requires fundamental alterations in legal theory. This article offers one way of considering the issues arising from unparalleled informational access and usage, but of course there are many ways to think about such issues. More important than the absolute correctness of any emerging views is that we begin the dialogue that recognizes the important changes that are occurring around us.



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