

**Artificial Intelligence & Machine Learning:
Emerging Legal and Self-Regulatory Considerations**

Part Two

**Competition Implications of Big Data and
Artificial Intelligence/Machine Learning**

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The Antitrust Law Section is aware that other sections of the ABA, including the Science and Technology Law Section (https://www.americanbar.org/groups/science_technology) and the Business Law Section (https://www.americanbar.org/groups/business_law), have written materials and other projects related to the subject matter of this paper. Those materials may supplement, expand, or conflict with the contents of this report. We encourage you to review their work on this important subject.

EXECUTIVE SUMMARY

Recent technological advances have dramatically increased the amount of information we produce and our ability to store and analyze that information. Firms have leveraged this “Big Data” revolution to gain insights and develop Artificial Intelligence and Machine Learning (“AI/ML”) capabilities. Competition law has been strongly affected these changes, as practitioners, enforcers, and courts strive to adapt legal and economic principles from the first two industrial revolutions to the third. This is likely to be a multi-generational challenge, and a full discussion of every potential problem that Big Data and AI/ML will raise is well beyond the scope of this report. Nevertheless, legal practitioners, economists, and academia are already grappling with significant issues, including how to evaluate market power and define markets for “zero-price” products; the rise of multi-sided markets; the role of consumer protection considerations, such as privacy and informational self-determination in the antitrust context; algorithms that “learn” to coordinate; mergers and acquisitions of data assets; and international regulation of multinational firms. This report—Part Two in a two-part series—introduces how competition law, especially in the United States, has begun to be applied to these issues. (Part One of the report analyzed the consumer protection implications of Big Data and AI/ML). It begins with a brief discussion of how antitrust law and economics approach questions surrounding Big Data and AI/ML. The report then surveys litigation and enforcement actions that have touched on these issues, including in the United States, Europe, and other jurisdictions. Finally, the report summarizes various international reports that have analyzed similar Big Data and AI/ML issues and their recommendations.

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PREFACE

This white paper is Part Two of the Big Data: Law and Impact Study Task Force series on emerging legal and regulatory implications of artificial intelligence and machine learning technologies. Part Two summarizes U.S. and international jurisprudence, regulatory guidance, and studies about competition issues arising from artificial intelligence and machine learning technologies and related business models.

The Big Data Task Force was established in June 2018 by the Section on Antitrust Law of the American Bar Association. Task Force membership is comprised of more than 20 attorneys and economists with extensive experience in competition law and related disciplines. The Task Force was formed with the following objectives:

- Identify industry structure in the creation, collection, sale, and use of big data and define current and expected scope of practices;
- Frame the legal, regulatory, and ethical challenges related to artificial intelligence and machine learning;
- Consider how consumer protection and competition law has been applied or likely will apply to artificial intelligence and machine learning; and
- Determine how industry has addressed or could address these issues through self-regulation and codes of ethics.

We offer our appreciation and thanks to the members of the Task Force and their colleagues, who have contributed their time and effort to this project. We hope that Part Two will provide a resource for attorneys, economists, policymakers, and others working in high-technology sectors and other industries adopting these technologies and business models.

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PART I: INTRODUCTION

Given the explosion of computing power in the twenty-first century, firms are now able to organize “high-volume, high-velocity, and/or high-variety information”¹ assets, that is, “big data.” Firms are then able to leverage insights from big data into artificial intelligence (AI) and machine learning (ML) technologies. This rapid technological change has connected people across national borders, altered the relationship between governments and firms, and led to a reconfiguration of capital on a scale that has not been seen in decades.

Competition law has not been left untouched by these changes. This chapter attempts to survey the landscapes of how competition law, in the United States and abroad, has dealt with the rise of artificial intelligence and machine learning. More specifically, this Part discusses:

- Economic implications for courts and antitrust enforcers, including market definition, market power, barriers to entry, and consumer protection issues;
- Judicial developments, including new “multi-sided market” case law; monopolization and abuse of dominance claims based on data assets; algorithmic coordination and other forms of multi-firm conduct; and mergers and acquisitions of artificial intelligence targets, including those with machine learning capabilities;
- Comparative international approaches, including reports by various governmental and non-governmental organizations; and
- The intersection between competition law and other legal priorities, such as privacy and informational self-determination.

¹ *Big Data*, GARTNER IT GLOSSARY, <https://www.gartner.com/it-glossary/big-data/>. In this report, artificial intelligence (AI) refers to the use of “algorithmic-powered computer processes that learn to perform actions that correspond to and even surpass human abilities. Instead of relying solely on human instruction, some current AI programs incorporate machine learning to develop their algorithms. Machine learning occurs when a program can adapt in response to new observations. . . . AI based on machine learning, once trained, can make determinations or decisions through algorithms that are driven by what has been learned by the data, rather than being dependent on programmed or preset inputs.” See AMERICAN BAR ASSOCIATION SECTION OF ANTITRUST LAW, ARTIFICIAL INTELLIGENCE & MACHINE LEARNING: EMERGING LEGAL AND SELF-REGULATORY CONSIDERATIONS (Sept. 2019), available at https://www.americanbar.org/content/dam/aba/administrative/antitrust_law/comments/october-2019/clean-antitrust-ai-report-pt1-093019.pdf.

It seems that every day there is yet another development for competition law and artificial intelligence / machine learning. Given the fast pace legal and technological change, this Part cannot hope to fully capture the shifting landscape. However, we hope that this Part serves as a helpful guide for practitioners, commentators, and governmental enforcers seeking to understand more about the impact of artificial intelligence and machine learning on competition law.

PART II: Antitrust Analysis Involving Big Data and AI/ML

A. Economic and other approaches to antitrust law analysis

Agencies in the EU and the United States are currently investigating and in some instances bringing antitrust claims against large technology companies, such as Google, Apple, Amazon, and Facebook.² These companies have come under scrutiny as they have experienced meaningful growth over time, and have become regularly used by billions of consumers across the globe.³

At the same time, advances in artificial intelligence and its applications to big data have also become a key tool of innovation that impacts market competition. For some, the standard concerns of monopolization, firm dominance, and economic efficiency have expanded to a broader set of topics, including a focus on national economic and military power, income and wealth inequity, and fears that state, foreign, and corporate interests may obtain personal data about individuals and influence policy and the political process. Such concerns have re-sparked a debate about the goals of antitrust legislation and its implementation. Is the current focus on the consumer

² Jason Del Rey, *6 Reasons Smaller Companies Want to Break up Big Tech*, VOX RECODE, Jan. 22, 2020, available at <https://www.vox.com/recode/2020/1/22/21070898/big-tech-antitrust-amazon-apple-google-facebook-house-hearing-congress-break-up>. See *infra* III.a.iii.

³ Anita Balakrishnan, *Here's How Billions of People Use Google Products, in One Chart*, CNBC, May 2017, available at <https://www.cnbc.com/2017/05/18/google-user-numbers-youtube-android-drive-photos.html>; Lucas Matney, *Google Has 2 Billion Users on Android, 500m on Google Photos*, TECH CRUNCH, May 2017, available at <https://techcrunch.com/2017/05/17/google-has-2-billion-users-on-android-500m-on-google-photos/>.

welfare standard too narrow when considering effective antitrust regulation for large technology companies?

Antitrust legislation and enforcement have relied on assessing consumer welfare and economic efficiency since the 1980s, following the Chicago School of thought. Chicago scholars, led by Robert Bork and Richard Posner, “emphasized efficiency explanations for many phenomena, including industrial concentration, mergers, and contractual restraints, that antitrust law acutely disfavored in the 1950s and 1960s.”⁴ They viewed many antitrust activities of the postwar era as excessive. For example, they argued that some conduct the U.S. Supreme Court had declared per se illegal between 1940 and 1972, such as vertical restraints, is in fact procompetitive and thus should be assessed under the rule of reason. The Supreme Court was convinced by the Chicago scholars’ arguments. In 1979, citing Robert Bork, the Supreme Court decided that “Congress designed the Sherman Act as a ‘consumer welfare prescription.’”⁵

The controversy regarding the goals of antitrust law was still not entirely settled; the consumer welfare standard still had to be defined and rules for enforcing it determined. Bork defined consumer welfare as synonymous with economic efficiency, where efficiency is reduced when output is restricted and deadweight losses arise. In adopting this approach, Bork explicitly abstracted from wealth transfers between consumers and producers. From an economic perspective, questions of wealth transfers were simply considered separately from the question of whether an efficient use of resources was being achieved. Even as the general approach of focusing on consumer welfare through price and quantity became the standard for competitive analysis,

⁴ William E. Kovacic & Carl Shapiro, *Antitrust Policy: A Century of Economic and Legal Thinking*, 14 J. ECON. PERSP. 43 (2000).

⁵ Reiter v. Sonotone Corp., 442 U.S. 330, 343 (1979).

there was still recognition that additional aspects of welfare, such as quality, variety, or innovation, also had to be taken into account when assessing consumer welfare. In fact, this has been incorporated into the Horizontal Merger Guidelines.⁶

An important implication of the consumer welfare standard is that monopolies that exist because a firm has superior technology, higher quality, or lower costs (and hence efficiencies and lower quality-adjusted prices to consumers over time) lead to increases in consumer welfare relative to a world in which that innovation, higher quality, or lower cost did not exist. Said differently, if a company builds a better mousetrap, and becomes through that ingenuity the favored (or even only) mousetrap seller in the country, consumers are better off than if that better mousetrap did not exist. The mousetrap company is big because it is better (i.e., more efficient in a quality-adjusted manner). So in this sense, big, in and of itself, is not problematic for consumer welfare, and in fact, the desire by companies to become bigger causes them to strive to be better, which, as long as other companies are free to compete on the merits, ultimately makes production more efficient and benefits consumers.⁷

⁶ Enhancement of market power by sellers often elevates the prices charged to customers. For simplicity of exposition, these Guidelines generally discuss the analysis in terms of such price effects. Enhanced market power can also be manifested in non-price terms and conditions that adversely affect customers, including reduced product quality, reduced product variety, reduced service, or diminished innovation. Such non-price effects may coexist with price effects, or can arise in their absence.

U.S. DEP’T OF JUSTICE & FED. TRADE COMM’N, HORIZONTAL MERGER GUIDELINES (2010), *available at* https://www.ftc.gov/system/files/documents/public_statements/804291/100819hmg.pdf.

⁷ “Indeed, as courts and enforcers have in recent years come to better appreciate, the prospect of monopoly profits may well be what ‘attracts ‘business acumen’ in the first place; it induces risk taking that produces innovation and economic growth.’” See U.S. DEP’T OF JUSTICE, COMPETITION AND MONOPOLY: SINGLE-FIRM CONDUCT UNDER SECTION 2 OF THE SHERMAN ACT: CHAPTER 1 (2008), *available at* <https://www.justice.gov/atr/competition-and-monopoly-single-firm-conduct-under-section-2-sherman-act-chapter-1>.

Recently Tim Wu and Lina Khan, key to a group of scholars sometimes called the Neo-Brandeisians, have challenged the economic efficiency or consumer welfare standard as too narrow, even when it takes into account non-price aspects of welfare.⁸ Especially in the context of the large technology companies,⁹ they claim that the consumer welfare standard cannot capture what they argue should be important antitrust goals because the “bigness” of companies can be a concern in and of itself.¹⁰ First, Neo-Brandeisian scholars agree that “certain industries tend naturally towards monopoly,” including businesses with network effects.¹¹ They argue that monopolies should be regulated to ensure the monopoly does not exploit its market power and so that “executives face the right incentives to provide the best service possible.” Khan also points out that “[i]n the past Americans have used both direct government regulation, and various forms of antimonopoly law and policy, to achieve these ends.”¹² Second, these scholars fear that “concentration of economic power aids the concentration of political power.”¹³ They see their legislative intent represented in the *Alcoa* decision from 1945:¹⁴

We have been speaking only of the economic reasons which forbid monopoly; but, as we have already implied, there are others, based upon the belief that great industrial consolidations are inherently undesirable, regardless of their economic results.... [A]mong the purposes of Congress in 1890 was a desire to put an end to

⁸ Tim Wu, *After Consumer Welfare, Now What? The “Protection of Competition” Standard in Practice*, COMPETITION POL’Y INT’L, Apr. 18, 2018, available at <https://www.competitionpolicyinternational.com/after-consumer-welfare-now-what-the-protection-of-competition-standard-in-practice/>.

⁹ Lina Khan, *Amazon’s Antitrust Paradox*, 126 YALE L. J. 710 (2017), available at <https://digitalcommons.law.yale.edu/cgi/viewcontent.cgi?article=5785&context=ylj>.

¹⁰ Daniel Crane, *Four Questions for the Neo-Brandeisians*, COMPETITION POL’Y INT’L (2018), available at <https://www.competitionpolicyinternational.com/four-questions-for-the-neo-brandeisians/>.

¹¹ Lina Khan, *The New Brandeis Movement: America’s Antimonopoly Debate*, 9 J. EUR. COMPETITION L. & PRAC. 131, 131–132 (2018), available at <https://doi.org/10.1093/jeclap/lpy020>. For more discussion on network effects see text accompanying n.43, *infra*.

¹² Khan, *supra* note 11 at 131–132.

¹³ *Id.*

¹⁴ United States v. Aluminum Co. of Am., 148 F.2d 416, 429 (2d Cir. 1945).

great aggregations of capital because of the helplessness of the individual before them.... Throughout the history of these statutes it has been constantly assumed that one of their purposes was to perpetuate and preserve, for its own sake and in spite of possible cost, an organization of industry in small units which can effectively compete with each other.

In addition to the potential harms that come with “bigness,” Neo-Brandeisians also argue that even the consumer welfare standard has not been adequately enforced in antitrust in the United States. This is because, in a practical sense, “the emphasis on measurable harms to consumers” leads to a bias in the “law toward a focus on static harms and, especially, on prices.” In this view “some of the most serious anticompetitive harms,” like the “blocking of potential competition, slowing of innovation, loss of quality competition, and overall industry stagnation,” while theoretically addressable under a consumer welfare standard, are not practically and effectively addressed because “the importance of demonstrated price effects has weakened the law’s ability to deal with” concerns with these non-price effects.¹⁵ They raise this as particularly important in the context of nascent technology markets that are subject to strong—and hard to measure or quantify—network effects.

The Chicago School approach, confirmed by the Supreme Court,¹⁶ generally warns against antitrust enforcement in the absence of exhibited harm to consumer welfare. This is because a policy of categorizing firms as problematic due to their size in the marketplace would lead to “false positives” (i.e., an assumption that a larger firm is causing harm when to the contrary it is benefiting consumers by offering a less expensive and/or superior product). The concern with

¹⁵ Wu, *supra* note 8.

¹⁶ “Against the slight benefits of antitrust intervention here, we must weigh a realistic assessment of its costs. . . . Mistaken inferences and the resulting false condemnations ‘are especially costly, because they chill the very conduct the antitrust laws are designed to protect. . . .’ The cost of false positives counsels against an undue expansion of § 2 liability.” *Verizon v. Law Offices of Curtis V. Trinko, LLP*, 540 U.S. 398, 414 (2004) (quoting *Matsushita Elec. Indus. Co. v. Zenith Radio Corp.*, 475 U.S. 574 (1986)).

improperly interfering, through enforcement or regulation, with false positives is both direct (i.e., it would inhibit benefits provided by the firm itself) and indirect (i.e., it would chill the general incentives for firms to grow through innovation and/or finding efficiencies). The Neo-Brandeisians would argue that one must also consider the costs of “false negatives” (*i.e.*, assuming that a firm is not causing harm when it in fact is) that accompany what they deem the limited consumer welfare approach to identifying harm. The concern with improperly *not* interfering with false negatives is that it leads to firms that reduce competition in the firm’s industry (direct effect), but also leads large firms to exist that have significant societal costs.

The preceding is characterized by debate and discussion regarding the appropriate tools to regulate firms in the digital economy. A benefit of the Chicago School is that it has provided antitrust practitioners with a concrete set of tools. Yet, there is debate about whether these tools are adapting quickly enough to address the rising issues in multi-sided markets with large network effects. If it is the case that once “bigness” arises, it is difficult to overturn, then there arguably may be significant societal costs that would not be reflected in current prices and output. In contrast, the Neo-Brandeisians’ concept of “protection of competition” is in its infancy and does not offer concrete rules or guidelines for assessment.¹⁷ It is especially difficult to determine rules that allow judges to decide when and how “bigness” should be taken into account in antitrust regulation.

There continues to be debate about these two general approaches, and for example whether antitrust policy should move towards ex-ante regulation of industries as opposed to ex-post

¹⁷ “This leads us, finally, to our question: is ‘protection of competition’ or ‘protection of the competitive process’ too indeterminate a standard? I think the answer is ‘no,’ because it draws on tests already in use in antitrust law and practice. Nonetheless, I think that its development will require much further work and practice to arrive at practicable standards.” Wu, *supra* note 8.

enforcement of rules. Additionally, and despite their differences in assessing the importance of various aspects of market dynamics for antitrust policy in a normative way, it is a prerequisite for both to capture the positive dynamics of the competitive process.¹⁸ Therefore, for either policy regime, understanding the economic dynamics inherent in data-intensive technology firms is crucial.

B. Market concentration and market power in regard to data

This section describes key economic issues for consideration when assessing market concentration and market power in regard to data and AI. Government enforcers and courts have also considered this question. *See Section III.a.ii, infra.*

1. *The value of big data, ML, and AI*

Organizations all over the world collect data. With the ability to gather, sense, and record information rising, and the cost of storing and saving it falling, data of all sorts and types are ubiquitous. These big data are generated at a high frequency, by different participants in economic markets and through varied processes, and stand out due to the volume and variety of observations they provide. Consumers, businesses, governments, and other entities all generate different kinds of data for many purposes. For example, consumers serve as the primary source for user-generated data. Purchases of products, web page visits, and online searches all provide user-generated data that businesses leverage to develop better products or tailor their products and marketing to consumer preferences.¹⁹ Businesses generate internal data that enable them to streamline processes and increase their productivity. Governments invest in large, public data projects like national

¹⁸ “This kind of analysis attempts to capture far more of the dynamics of the competitive process than does existing analyses, and also implicate political considerations as well.” Wu, *supra* note 8.

¹⁹ Nga Ho-Dac, *The Value of Online User Generated Content in Product Development*, 112 J. BUS. RES. 136 (2020), available at <https://doi.org/10.1016/j.jbusres.2020.02.030>.

censuses and health surveys that researchers use to understand important issues like the causes of Alzheimer's disease.²⁰

Data is typically not an end in itself, but rather is useful when inferences can be drawn from it, often from machine learning applications that lead to AI data-driven algorithms.²¹ Availability of data has expanded the range of applications for AI and ML because the creation of AI algorithms and big data function as complementary inputs. With more relevant data, the predictive power of the models and algorithms has increased and therefore firms, and the economy more broadly, can draw more value from them.²²

It follows that AI has become more commonly used by consumers, governments, and firms alike.²³ While many foundational tools of AI have been available for decades,²⁴ the value firms draw from AI today stems from the availability of big data that feeds into data-hungry AI algorithms.²⁵ For example, big data and AI allow companies to market their products more

²⁰ AMERICAN BAR ASSOCIATION SECTION OF ANTITRUST LAW, ARTIFICIAL INTELLIGENCE & MACHINE LEARNING: EMERGING LEGAL AND SELF-REGULATORY CONSIDERATIONS (Sept. 2019), *available at* https://www.americanbar.org/content/dam/aba/administrative/antitrust_law/comments/october-2019/clean-antitrust-ai-report-pt1-093019.pdf.

²¹ See Gartner IT Glossary, *supra* note 1.

²² Michael Chui et al., *Notes from the AI Frontier Insights from Hundreds of Use Cases*, MCKINLEY GLOBAL INSTITUTE (Apr. 2018), at 7, *available at* <https://www.mckinsey.com/~media/McKinsey/Featured%20Insights/Artificial%20Intelligence/Notes%20from%20the%20AI%20frontier%20Applications%20and%20value%20of%20deep%20learning/Notes-from-the-AI-frontier-Insights-from-hundreds-of-use-cases-Discussion-paper.pdf>.

²³ Press Release, IDC, Worldwide Spending on Artificial Intelligence Systems Will Grow to Nearly \$35.8 Billion in 2019, According to New IDC Spending Guide (Mar. 11, 2019), *available at* <https://www.pcworld.com/news/gartners-cio-agenda-and-ceo-perspective-for-2019>, <https://www.idc.com/getdoc.jsp?containerId=prUS44911419>.

²⁴ Rockwell Anyoha, *The History of Artificial Intelligence*, SCIENCE IN THE NEWS, Aug. 28, 2017, *available at* <http://sitn.hms.harvard.edu/flash/2017/history-artificial-intelligence/>.

²⁵ Sometimes particular value is generated through the combination of various kinds of datasets. For example, “[r]etailers are integrating their online, in-store, and catalog sales databases to create more complete pictures of their customers. Williams- Sonoma, for example, has integrated customer databases with information on 60 million households. Variables including household income, housing values, and number of children are

effectively and efficiently, by identifying and targeting specific, well-matched consumers.²⁶ Financial institutions have been able to accurately detect fraudulent credit card activity in real time by monitoring specific details about individual credit cards with 80 to 90 percent accuracy.²⁷ Biopharmaceuticals manufacturers use data analytics of their processes to increase yield in vaccine production without additional capital expenditure.²⁸ The National School Boards Association has used big data to identify students at risk of not completing high school, allowing them to fight racial discrepancies in graduation rates.²⁹ Korea and Taiwan have been able to successfully mitigate the initial rapid spread of SARS-CoV-2 by unlocking the potential of digital platforms, big data, and machine learning.³⁰ Countless other players use big data in order to successfully execute various kinds of AI algorithms and take advantage of business opportunities.³¹

tracked.” See EXECUTIVE OFFICE OF THE PRESIDENT, BIG DATA AND PRIVACY: A TECHNOLOGICAL PERSPECTIVE (May 2014), available at https://bigdatawg.nist.gov/pdf/pcast_big_data_and_privacy_-_may_2014.pdf.

²⁶ Alison DeNisco-Rayome, *How Wayfair Used Big Data and Omnichannel Retail to Transform Shopping*, ZDNET, Sept. 1, 2017, available at <https://www.zdnet.com/article/how-wayfair-used-big-data-andomnichannel-retail-to-transform-shopping/>.

²⁷ Siddhartha Bhattacharyya et al., *Data Mining for Credit Card Fraud: A Comparative Study*, DECISION SUPPORT SYSTEM 50 (2011).

²⁸ Eric Auschitzky et al., *How Big Data Can Improve Manufacturing*, MCKINLEY GLOBAL INSTITUTE (July 2014), available at <https://www.mckinsey.com/business-functions/operations/our-insights/how-big-data-can-improvemanufacturing>.

²⁹ *Big Data: A Tool for Fighting Discrimination and Empowering Groups*, FUTURE OF PRIVACY FORUM AND ANTI-DEFAMATION LEAGUE (Sept. 2014), available at <https://fpf.org/wp-content/uploads/BigData-A-Tool-for-Fighting-Discrimination-and-Empowering-Groups-FINAL.pdf>.

³⁰ Anindya Ghose & Daniel Sokol, *Unlocking Platform Technology to Combat Health Pandemics*, YALE J. ON REG. (2018), available at https://www.yalejreg.com/nc/unlocking-platform-technology-to-combat-health-pandemics-by-anindya-ghose-and-daniel-sokol/?fbclid=IwAR1JFBF9tLlhAKPH514QTGeJFHiTzat7Bs9wgA5Y9UtxfSM1ss2N5dRI_iM.

³¹ Philip Russom, *Data Requirements for Machine Learning*, TDWI UPSIDE, Sept. 14, 2018, available at <https://tdwi.org/articles/2018/09/14/adv-all-data-requirements-for-machine-learning.aspx>. Big data does not have a singular definition; however, it is typically characterized by the Four V’s: volume, velocity, variety, and value. See AMERICAN BAR ASSOCIATION SECTION OF ANTITRUST LAW, ARTIFICIAL INTELLIGENCE & MACHINE LEARNING: EMERGING LEGAL AND SELF-REGULATORY CONSIDERATIONS (Sept. 2019), available at

The utilization of user-generated data is a key component of many business models in the digital economy. One type of business that has received special interest is multi-sided internet platforms in which consumers provide personal data on one side of the platform in exchange for a provided service, and the platform then uses the personal data to provide a different service to the other side of the platform. For example, Google, Facebook, and others gather data as consumers use the platform services free of charge. The user-generated data, typically combined with effective AI processes, enable these platforms then to both provide additional and better services to consumers as well as to sell targeted ads to advertisers.

2. *Issues related to market power that can arise from the ownership of data*

Market power has been defined by courts and economists as the ability of a firm to maintain prices above competitive levels or reduce the quality of its product without profit losses for a sustained amount of time.³² To identify market power related to data, one must first define the competitive concern at issue. For example, is the data a product the firm sells? If so, then can one ostensibly apply standard product market analysis to the questions of market definition, concentration, and market power? What constitutes the “sale” of that data? Further, what do customers of the data view as substitute data products, and how sensitive are they to changes in the prices of those products? Who are the competitors currently selling substitutable data, and are there any limits on their ability to sell to the relevant customers? What are the barriers to entry, if any, of a new competitor entering and providing new substitute products to customers?

https://www.americanbar.org/content/dam/aba/administrative/antitrust_law/comments/october-2019/clean-antitrust-ai-report-pt1-093019.pdf.

³² U.S. DEP’T OF JUSTICE, COMPETITION AND MONOPOLY: SINGLE-FIRM CONDUCT UNDER SECTION 2 OF THE SHERMAN ACT: CHAPTER 2 (2008), *available at* <https://www.justice.gov/atr/competition-and-monopoly-single-firm-conduct-under-section-2-sherman-act-chapter-2>.

Often when data and AI are jointly at issue the competitive question is more complex—for example, when the data at issue is not a product the company sells, but is instead a byproduct of, or an input to, the company’s business processes. Here the ultimate competitive question may be “how does the data collected during the normal course of business impact the firm’s and other firms’ ability to compete?” This question has been raised in discussions about large tech firms that transact their business electronically, including search engines, large online retailers, social networks, and electronic device makers. Yet it is worth noting that these are not the only firms moving into the digital economy—many brick and mortar stores are becoming avid collectors and users of data.³³ In fact, successful firms across our economy are using, and will increasingly use, a common strategy in order to compete: collect, create, and analyze data in order to better their product offerings and internal processes. If especially successful, a firm may out-compete its rivals due to the data it has collected, generated, and analyzed. Historically, high market share gained through offering better or lower-priced products to consumers has not been considered of antitrust concern. The current debate is focused in part on when the ownership of data combined with the ability to draw valuable inferences (allowing firms to offer valuable services or products) can or should provide market power of antitrust concern.

At the core of assessing market power is whether the ownership of the data allows the company to preclude rivals from effectively competing in some manner, that is, whether the

³³ Walmart has spent decades building up immense amounts of data both from its stores but also its inventory management practice. See Bernard Marr, *Really Big Data at Walmart: Real-Time Insights from Their 40+ Petabyte Data Cloud*, FORBES, Jan. 23, 2017, available at <https://www.forbes.com/sites/bernardmarr/2017/01/23/really-big-data-at-walmart-real-time-insights-from-their-40-petabyte-data-cloud/#2db0bafe6c10>.

ownership of data constitutes a barrier to the entry of new firms. A number of factual features indicate that access to data itself does not ordinarily confer market power.

The nature of the data:

- *Data is typically non-rivalrous.* At the outset a firm's use of most data does not typically reduce the data's availability to competitors—that is, data is generally non-rivalrous.³⁴ Data can be replicated, provided to multiple suppliers by buyers, shared between businesses, and gathered by multiple entities, all of which make market power through data less likely.
- *Are there many collectors of similar data?* For example, for much consumer data, often the same action (e.g., going to a particular location) or purchase will lead data to be collected by numerous different entities (e.g., apps, retailers, credit card company, etc.). In other circumstances, the collected data may be largely unique. This may be more likely if there are increasing returns to the scale of data in the production of the provided service, as the cost of gathering the data may exceed the benefit for an entering firm.
- *Can consumers easily switch between providers of products and services or multi-home (e.g., engage with multiple entities at the same time for similar purposes)?* Ease of multi-homing and switching makes market power from data unlikely. On the other hand, in rare situations where consumers do not have multi-homing alternatives or where multi-homing comes at exceptionally high switching costs, consumers may become “locked-in.”³⁵ It is a debated question as to what constitutes a “switching cost” in this context. Forms of switching costs that have been posited in regard to technology and data-driven markets include the time to learn how to use a new technology, loss of potential network contacts, or loss in product quality because the existing supplier uses a consumer’s history to individualize its product in a desirable way.³⁶ In technological markets, consumers often must adapt to new products and services, and so switching costs may be less of a problem. Yet, in the non-data context, it is typically not considered a switching cost to consumers for one firm to provide a higher quality product than its competitors.

³⁴ Charles I. Jones & Christopher Tonetti, *Nonrivalry and the Economics of Data* (Stanford Graduate School of Business, Working Paper No. 3716, Aug. 2019), available at <https://www.gsb.stanford.edu/faculty-research/working-papers/nonrivalry-economics-data>.

³⁵ Thomas Eisenmann, Geoffrey Parker & Marshall Van Alstyne, *Platform Networks – Core Concepts Executive Summary*, MIT CENTER FOR DIGITAL BUSINESS (May 2007), available at http://ebusiness.mit.edu/research/papers/232_VanAlstyne_NW_as_Platform.pdf.

³⁶ OECD, *RETHINKING ANTITRUST TOOLS FOR MULTI-SIDED PLATFORMS* (2018), available at <https://www.oecd.org/daf/competition/Rethinking-antitrust-tools-for-multi-sided-platforms-2018.pdf>.

The ability for data to provide market power also depends on the role of the data in the firm's ability to offer services and products to compete for customers:

- *Over what period is the data collected and valuable?* Data may be voluminous but only valuable for a limited period of time, which limits its ability to exclude competitors or entrants.
- *Is the data essential for competition in the product market?* Data may be a useful input, but not the necessary ingredient for competition or entry. Data, even concentrated data, may not yield market power without other inputs, such as AI algorithms.³⁷ Thus, the most impactful competition may derive from other features, including invention, engineering talent, speed of innovation, or better forecasting of customer needs.³⁸ Alternatively, the data may be found to be the essential input to successful competition in the marketplace. The Federal Trade Commission (FTC) and Department of Justice (DOJ) have assessed some cases where they found access to certain data was a key input for competition. For example, in the case of Nielsen-Arbitron the FTC found data to be a significant barrier to entry.
- *If data is important for competition, how much data is essential for competition in the product market?* When assessing the competitive impact of owning large amounts of data, it is necessary to determine the volume of data required to offer competitive products or services. Data may have diminishing returns to scale, such that after a point, additional data does not provide a meaningful advantage (e.g., in creating AI-driven services or offerings). In this case, the entering firm will not need to match the incumbent firms' data resources to compete.³⁹

3. ***Multi-sided markets and market concentration***

While not all firms that own valuable data or successfully employ AI participate in multi-sided markets, some do. When they do, the data that is collected in the normal course of business

³⁷ Anja Lambrecht & Catherine E. Tucker, *Can Big Data Protect a Firm from Competition?* (Working Paper, Dec. 18, 2015), available at https://ec.europa.eu/information_society/newsroom/image/document/2016-6/computer_and_communications_industry_association_-can_big_data_protect_a_firm_from_competition_13846.pdf.

³⁸ “Take the online dating application, Tinder, initially launched in September 2012, as an example. Data is of particular value in industries where personalized experience is important, such as online dating. When Tinder launched, it had no access to user data, but nevertheless it became the market leader within a couple of years. Lambrecht and Tucker explain that even in this highly data driven industry, Tinder succeeded not through reliance on Big Data, but due to the strength of its underlying solution. A simple user interface and a precise attention to consumer needs resulted in massive gains for the new entrant.” D. Daniel Sokol & Roisin Comerford, *Antitrust and Regulating Big Data*, 23 GEO. MASON L. REV. 119 (2016).

³⁹ Lambrecht & Tucker, *supra* note 37.

can be valuable for providing competitive products and services on both sides of the platform. Some commentators have argued that firms in multi-sided markets are more likely to be able to use the data they collect to gain and maintain market power of antitrust concern.⁴⁰ Thus, it is important to understand the economic dynamics of multi-sided platforms, which have some distinct economic features.

A defining feature of a multi-sided market is when a platform or intermediary is serving two groups in which each group benefits from network effects in the size of the other group (i.e., “indirect network effects”). For example, credit cards have been found to be a multi-sided transaction platform,⁴¹ in which consumers benefit when more merchants accept the credit card, and merchants benefit when more consumers carry that credit card. While for legal purposes multi-sidedness may need to be determined categorically (either a market is multi-sided or it is not),⁴² as an economic concept it is also in general possible to consider *degrees* of multi-sidedness, by analyzing *degrees* of indirect network effects.

When multi-sided platforms exist, the competitive environment will lead to platforms of different sizes depending on a number of features of the marketplace. Strong network effects (both direct and indirect) increase the likelihood of larger platforms. *Direct network effects* arise when the benefits of goods or services increase as the number of users on one side of the platform

⁴⁰ STIGLER CENTER FOR THE STUDY OF THE ECONOMY AND THE STATE & UNIVERSITY OF CHICAGO BOOTH SCHOOL OF BUSINESS, STIGLER COMMITTEE ON DIGITAL PLATFORMS: FINAL REPORT (2019), available at <https://research.chicagobooth.edu/-/media/research/stigler/pdfs/digital-platforms---committee-report---stigler-center.pdf?la=en&hash=2D23583FF8BCC560B7FEF7A81E1F95C1DDC5225E> [hereinafter STIGLER CENTER REPORT].

⁴¹ Ohio v. Am. Express Co., 138 S. Ct. 2274, 2295–96, 2302 (2018).

⁴² US Airways, Inc. v. Sabre Holdings Corp., No. 17-960 (2d Cir. 2019); Ohio v. Am. Express Co., 138 S. Ct. 2274, 2295–96, 2302 (2018). See text accompanying n.58, *infra*.

increase.⁴³ For example, a social network may be more useful to its users when more users participate, which would in turn, everything else equal, lead to larger competitive platforms.

Indirect network effects are present when larger networks on either side of a platform will lead to higher value on the other side of the platform. For example, consumers buying handmade goods may value more choices of goods, and sellers of handmade goods may value more potential consumers. *Economies of scale* in the cost of operating a platform may also increase the likelihood of larger platforms. For example, an app platform may face large fixed costs of ensuring that apps are safe to use for consumers because it has to design and implement AI algorithms to identify malicious apps. When these general economic dynamics are together, it implies that, everything else equal, competitive forces will lead to larger platforms, which in turn may lead to higher market concentration, or in the extreme, monopolization.⁴⁴

That said, there are a variety of features of the marketplace that tend to reduce platform size and/or concentration, including:⁴⁵

- *Heterogeneity.* Heterogeneity in consumer preferences can support demand for many differentiated platforms with consumers using multiple platforms at the same time (e.g., multi-homing). For example, riders who use both Uber and Lyft multi-home on ride sharing platforms. The same is true for drivers who use both Uber and Lyft to provide rides. If it is costly for users of a platform to multi-home, it is theoretically more likely there will be fewer differentiated platforms, everything else equal.⁴⁶
- *Congestion.* Indirect network effects may diminish at some size of the network for some part of the network. For example, a single platform that exhibited all home sales

⁴³ Catherine Tucker, *Network Effects and Market Power: What Have We Learned in the Last Decade?*, ANTITRUST, Spring 2018, at 42–49, available at <http://sites.bu.edu/tpri/files/2018/07/tucker-network-effects-antitrust2018.pdf>.

⁴⁴ David S. Evans & Richard Schmalensee, *Markets with Two-Sided Platforms*, ISSUES IN COMPETITION LAW AND POLICY (ABA SECTION OF ANTITRUST LAW), 2008.

⁴⁵ *Id.*

⁴⁶ Note that this cost incurs due to use of the product or affiliation with the provider. This cost differs from the cost of switching from one provider to another.

in the United States might not be more valuable to consumers and sellers in Maine than a smaller platform connecting sellers of homes in Maine to buyers of homes in Maine. Congestion may provide incentives for platforms to differentiate and, thus, lead to lower concentration levels and/or different forms of competing.

4. ***Market definition tools applied to multi-sided markets***

According to Filistrucchi et al. (2014), “[t]he main purpose of market definition is to identify the products that exert competitive pressure on the products sold by a particular firm or firms. . . . Market definition is therefore an attempt to define a group of products, which are substitutable to such an extent that the firms producing them can be perceived as competing against each other and which therefore constrain each other’s ability to increase prices.”⁴⁷

When strong direct and indirect network effects are at play, actions taken in relation to users on one side of the platform can have a strong effect on users on the other side of the platform (i.e., *feedback effects*). It follows that “pricing and production decisions” by the platform “are based on coordinating demand among interdependent customer groups.”⁴⁸ This economic dynamic also means that applying to a multi-sided market the traditional one-sided market definition tools, which ignore feedback effects, may lead to faulty conclusions.

For example, consider the Hypothetical Monopolist or typical SSNIP test.⁴⁹ The SSNIP test “defines the market as the smallest set of substitute products such that a substantial (usually five or ten percent) and non-transitory (usually one year) price increase by a hypothetical

⁴⁷ Lapo Filistrucchi et al., *Market Definition in Two-Sided Markets: Theory & Practice*, 10 J. COMPETITION L. & ECON. 293 (2014).

⁴⁸ David S. Evans, *The Antitrust Economics of Multi-Sided Platform Markets*, 20 YALE J. ON REG. 325, 325 (2003).

⁴⁹ *Id.*

⁴⁹ SSNIP stands for “Small-But-Significant-Non-Transitory Increase-in-Price.” See U.S. DEP’T OF JUSTICE & FED. TRADE COMM’N, HORIZONTAL MERGER GUIDELINES (2010), available at https://www.ftc.gov/system/files/documents/public_statements/804291/100819hmg.pdf.

monopolist would be *profitable*.⁵⁰ If the set of products considered is not sufficient to increase the firm's profits through a price increase, the set of products does not constitute a market and more products are included, until the condition is fulfilled.

When indirect network effects are present, the result of a SSNIP test may be sensitive to whether it is applied to one or both sides of the market. This is because a one-sided SSNIP test only accounts for "the direct effect that a price increase will have on the demand and profits of [that side of the market]"⁵¹ and thus ignores indirect network effects. Capturing the impact of indirect network effects by assessing both sides of the market may lead to different conclusions about the profitability of a hypothetical price increase. For example, a SSNIP test applied to one side of the market may find that a price increase was profitable (i.e., the platform could sustainably raise prices without losing so many users that it was unprofitable), yet the same price increase would not be considered profitable if both sides of the market are taken into account (i.e., the price increase is unprofitable once it also accounts for the losses on the other side of the platform).⁵²

A further complication in multi-sided market definition arises when the price on one side of the platform is set to zero. In such cases, the SSNIP test may not apply, and other non-price dimensions of the transaction will need to be considered, such as the value of paying with personal data or other quality aspects of pricing.⁵³

⁵⁰ Filistrucchi, *supra* note 47.

⁵¹ *Id.*

⁵² "[I]n a two-sided market the two sides of the market are by definition linked by the presence of indirect network effects. As a result, firms can be seen as platforms that need 'to get both sides on board' in order to do business. The question then arises whether only one market needs to be defined, or if there are two." Lapo Filistrucchi et al., *Market Definition in Two-Sided Markets: Theory & Practice*, 10 J. COMPETITION L. & ECON. 293 (2014).

⁵³ Daniel Mandrescu, *The SSNIP Test and Zero-Pricing Strategies: Considerations for Online Platforms*, 2 EUROPEAN COMPETITION & REG. L. REV. 244 (2018).

5. Considerations in assessing market power in multi-sided markets

Multi-sidedness does not change the defining features of market power. Although defining a relevant (geographic or product) market still provides one tool to evaluate market power, market concentration itself is not a superior proxy for assessing market power.⁵⁴ Yet, in the case of a multi-sided market, the relevant market may consist of both sides of the market,⁵⁵ which has a variety of implications for assessing market power.

Prices. Establishing a measure of price is important in order to apply a variety of standard empirical market tests, including assessing whether prices are above the “competitive” price. This exercise is more complex in a multi-sided market. This is because there are typically different prices being charged on different sides of the platform, which interact with each other due to indirect network effects.⁵⁶ Additionally, prices on a given side can be zero or negative.⁵⁷ The Supreme Court ruled in *Ohio v. American Express* that the presence of indirect network effects, and the accompanying interconnected pricing and demand, should trigger a market definition that combines the two sides of the market. The Court ruled that the market in American Express is a “multi-sided transaction market.” In such markets, the exchanged product is a transaction with a defined price because the platform cannot make a sale to one side of the platform without simultaneously making a sale to the other. In this context, the Court decided to focus on the “net” price

⁵⁴ Evans, *supra* note 48 at 356.

⁵⁵ *Id.* at 325.

⁵⁶ Evans explains that the platform may charge different market participant different prices to exploit network effects. *Id.* at 338.

⁵⁷ “Zero or negative prices are especially likely at the entry phase to get critical mass on one side of the market. Diners Club gave its charge card away to cardholders at first; there was no annual fee, and users received the benefit of the float. Netscape gave away its browser to most users to get a critical mass on the computer user side of the market; after Microsoft started giving away its browser to all users Netscape followed suit.” *Id.* at 351. See also David S. Evans & Richard Schmalensee, *The Industrial Organisation of Markets with Two-Sided Platforms*, 3 COMPETITION POL. INT’L 151, 161 (2007).

of the credit card “transaction platform” (e.g., the price of the service provided by the platform, which was the “net” of the prices paid by the consumers and merchants for credit cards).⁵⁸ However, determining the “net” price may not be economically or practically appropriate, possible, or relevant in every multi-sided market, such as when products on different sides of the platform are in separate markets.⁵⁹

Second, in multi-sided markets a standard one-sided comparison of prices to marginal cost may lead to misleading inferences. For example, when taking a one-sided approach, it may appear that a low price is below the marginal cost of providing the product or service to users. But if that low price led to the ability to charge higher prices on the other side of the market, it may no longer be viewed to be below cost.⁶⁰ Thus, when multi-sided markets are present different treatment is necessary when assessing whether pricing below marginal cost is in fact predatory or anticompetitive.⁶¹ Additionally, with zero prices, it may be unclear how to calculate the degree to which prices exceed the competitive level.⁶²

Quantity. In multi-sided markets, and especially markets with zero-price products, quantity may become a more useful measure of market competitiveness than attempts to assess whether prices exceed competitive levels.⁶³ Actions that have the net result of increasing transactions on

⁵⁸ Ohio v. Am. Express Co., 138 S. Ct. 2274, 2295–96, 2302 (2018). See majority decision and dissent by Justice Breyer.

⁵⁹ See Evans, *supra* note 48 at 368.

⁶⁰ *Id.* at 359.

⁶¹ David S. Evans, *Competition and Regulatory Policy for Multi-Sided Platforms with Applications to the Web Economy* (Working Paper, 2008); Geoffrey G. Parker & Marshall W. Van Alstyne, *Two-Sided Network Effects: A Theory of Information Product Design*, 15 MGMT. SCI. 1494 (2005).

⁶² Jan Krämer & Michael Wohlfarth, *Market Power, Regulatory Convergence, and the Role of Data in Digital Markets*, 42 TELECOMM. POL. 154 (2018).

⁶³ COMPETITION POLICY INTERNATIONAL PRESENTATION: MERGER POLICY WITH 2020 FORESIGHT, available at <https://www.competitionpolicyinternational.com/cpi-live/index.html>.

the platform (e.g., lower prices on either side of the platform, lower net prices, increasing quality of the platform) typically point to an increase in attractiveness in the platform (i.e., increased competitiveness, everything else equal).

Ohio v. American Express provides a good example of these dynamics. American Express charged higher fees to merchants than some other payment methods, but used “anti-steering” agreements to prevent those merchants from encouraging customers to use alternative payment methods when making transactions. Plaintiffs argued these agreements harmed competition, and that American Express charged anticompetitively high prices to merchants. American Express argued that this was one-sided thinking, and that the real dynamic was that its high merchant fees (e.g., higher prices) led to *increased transaction volume* (e.g., higher quantity) which in fact benefited merchants. This increase in quantity was due to the fact that American Express used the higher fees charged to merchants to offer rewards as discounts to cardholders. Thus, in American Express’s view, the higher fees paid by merchants were not a sign of American Express exerting market power. To the contrary, the higher fees led to increased transaction volume and higher value overall to merchants.⁶⁴

Market share. One-sided market share may also be ill-suited for inferring market power in the multi-sided market context. For example, a firm may have 100 percent of sales on one side of the market, but still be unable to increase prices due to feedback effects from the other side of the market. An example of this dynamic is as follows. In *United States v. Visa*, the DOJ put forward a study claiming that a hypothetical merger of 100 percent of card issuers could raise prices for cardholders,⁶⁵ yet ignored the feedback between cardholders and merchants. If the number of

⁶⁴ Ohio v. Am. Express Co., 138 S. Ct. 2274, 2295–96, 2302 (2018).

⁶⁵ Evans, *supra* note 48 at 359.

cardholders decreased due to higher prices, then the value of credit cards to merchants would also decrease. Thus, while the hypothetical monopolist credit card company would gain profits on the cardholder side, it would lose profits on the merchant side. Merchants leaving the card company could then further reduce cardholder participation. These indirect effects would constrain price increases for this hypothetical card company despite its 100 percent market share on the consumer side of the market. Additionally, the court ruled in the *Ohio v. American Express* case that it was necessary to establish “net harm” when assessing alleged anticompetitive behavior. In that case, the court placed the burden of proof on the plaintiffs to show harm to the combination of both sides of the market as a result of American Express’s conduct.⁶⁶ A showing of market shares on the merchant market were insufficient to establish American Express had market power with respect to merchants. In short, measures that take into account market power on multiple sides of the market may be needed to assess the degree of competition in a multi-sided market.

Multi-homing. Multi-homing can affect the relative size of the profits the platform receives from each side of the market. For example, if multi-homing is only available on one side of the market, and users on the other side of the market single-home, different platforms compete for the exclusive access to users on the single-homing side.⁶⁷ In general, this allows the single-homing side to secure a larger share of the joint surplus, while the multi-homing one receives a smaller share. To determine if the platform has market power and can gain supra-competitive profits, the

⁶⁶ Richard M. Brunell, *Ohio v. Amex: Not So Bad After All?*, ANTIRUST, Fall 2018, available at <https://www.antitrustinstitute.org/wp-content/uploads/2018/12/Brunell-Amex-Magazine-article.pdf>.

⁶⁷ Jean-Charles Rochet & and Jean Tirole, *Platform Competition in Two-Sided Markets*, CENTER FOR INSTITUTION AND BEHAVIOR STUDIES (2003).

effect of multi-homing on shifting profits from one side to the other side of the market needs to be considered.⁶⁸

6. *Interaction of data privacy laws, market power, big data, and AI/ML*

Privacy laws can interact the collection and use of big data in ways that enhance or hinder its potential to lead to market power. On the one hand, privacy laws like the EU's General Data Protection Regulation (GDPR) established requirements for data portability.⁶⁹ Easier data portability can reduce switching costs and increase the non-exclusivity of data. Data portability can enhance consumers' ability to constrain an incumbent supplier's attempt to exercise market power. On the other hand, enhanced privacy regulation can restrict data sharing. More restrictions on data sharing or the data-sharing process can make data more exclusive. Information like health history or license plate numbers may permit personal identification, and privacy laws may restrict data sharing in these cases.⁷⁰ Suppliers who manage to obtain or generate such data may gain and maintain market power through it, because their competitors cannot access similar data in terms of volume, variety, or value, as a result of the local or national privacy laws and regulations.⁷¹

⁶⁸ Jean-Charles Rochet & Jean Tirole, *Two-Sided Markets: A Progress Report*, 37 RAND J. ECON. 645 (2006).

⁶⁹ Art. 20 GDPR, Right to Data Portability, available at <https://gdpr-info.eu/art-20-gdpr/>. Other data localization laws, such as in Russia and China, can also impact geographic market definitions. See Federal Law No. 242-FZ, *On Amendments to Certain Legislative Acts of the Russian Federation for Clarification of the Procedure of Personal Data Processing in Information and Telecommunication Networks; The Security Assessment Measures on the Export of Personal Information and Important Data* (Draft for Comments) (China); and *Measures for Security Assessment for Cross-border Transfer of Personal Information* (Draft for Comments) (China).

⁷⁰ See, e.g., Daisuke Wakabayashi, *Google and the University of Chicago Are Sued Over Data Sharing*, N.Y. TIMES, June 26, 2019, available at <https://www.nytimes.com/2019/06/26/technology/google-university-chicago-data-sharing-lawsuit.html>.

⁷¹ Jeff John Roberts, *Here Comes America's First Privacy Law: What the CCPA Means for Business and Consumers*, FORTUNE, Sept. 13, 2019, available at <https://fortune.com/2019/09/13/what-is-ccpa-compliance-california-data-privacy-law/>.

C. Intersection of competition law and consumer protection law

1. *Tension between competition and privacy*

Regulators, academics, and public officials have recently drawn attention to competition issues associated with data privacy. Further, a variety of international organizations, including government entities, have studied and reported on the intersection of data privacy and competition. See Section III.d, *infra*. Although there is general agreement that competition law cannot solve all problems in digital markets, there is no consensus how or if antitrust law should be used to regulate data privacy, or which type of privacy harms necessitate regulation to protect against them. Indeed, data privacy expectations—including the wish to protect consumer data—can be in tension with promoting competition. This tension exists on all sides of the debate, including even the nature of the trade-offs.

There are numerous different suggested approaches for how and when antitrust regulators should intervene in data privacy issues. Some policymakers and advocates have proposed that federal antitrust and competition laws are an appropriate way to policy privacy violations. These advocates believe that privacy is merely a non-price aspect of competition, and businesses can and do vie with one another in promising to respect consumers' privacy.⁷² Regulations, and data protection and privacy regulators, often seek to protect the consumers who care about privacy and would prefer greater transparency about the use of their personal information.⁷³

⁷² Robert H. Lande, *The Microsoft-Yahoo Merger: Yes, Privacy Is an Antitrust Concern*, FTC: WATCH NO. 714, at 1 (Feb. 25, 2008).

⁷³ See Pamela Jones Harbour, Comm'r, Fed. Trade Comm'n, Dissenting Statement, Google/DoubleClick, FTC File No. 071-0170, at 1 (2007), available at www.ftc.gov/sites/default/files/documents/public_statements/statement-matter-google/doubleclick/071220harbour_0.pdf.

Under this view, enforcers should apply antitrust principles to analyze privacy issues in a variety of circumstances, such as when a merger might lead to reduced privacy competition, or where companies may mislead companies about their data policies in order to achieve or maintain market power.⁷⁴ According to supporters of analyzing privacy as a non-price dimension of competition, regulation should focus on consumers having access to their own data, and the burden should be on companies that have control over data to properly use and protect it based on reasonable consumer expectations.⁷⁵ In the context of some merger investigations and remedies involving specialized data, agencies have allowed mergers to occur but required data sharing as a remedy to the competition problem where data is difficult or expensive to create.⁷⁶

These supporters of analyzing data as a dimension of competition also argue that greater enforcement of privacy law may generally spur competition. However, if a firm collects so much user data that it becomes entrenched, it may gain the ability to use the data to eliminate potential challengers. Securing protection for consumer data may entrench incumbents, creating an antitrust problem by helping firms that have already collected a large amount of data to gain both the ability and incentive to use that data to eliminate potential challengers.⁷⁷ Without an approach that increases access to data, smaller rivals are prevented from accessing data directly from consumers,

⁷⁴ Pamela Jones Harbour & Tara Isa Koslov, *Section 2 in a Web 2.0 World: An Expanded Vision of Relevant Product Markets*, 76 ANTITRUST L.J. 769, 773 (2010).

⁷⁵ See, e.g., Ben Kochman, *Tech Giants Want Uniform Privacy Law, But No GDPR*, LAW360 (Sept. 26, 2018), <https://www.law360.com/articles/1086064> (“Representatives from Google LLC, Amazon.com Inc., Apple Inc., Twitter Inc., AT&T Inc. and Charter Communications Inc. all said they would support some sort of privacy law that would give consumers more control over the way in which their data is used.”).

⁷⁶ In *Fidelity National Financial/Stewart Information Services*, Dkt. No. C-4425 (FTC 2013), a series of mergers involving entities with databases of public real estate records used for title insurance underwriting (called “title plants”), the FTC required merging parties to sell copy of their title plant.

⁷⁷ Maurice E. Stucke & Ariel Ezrachi, *When Competition Fails to Optimize Quality: A Look at Search Engines*, 18 YALE J.L. & TECH. 70, 91 (2016).

whereas large incumbents can immediately access data, and the incentive for those firms to innovate and to compete with larger dominant firms is reduced.

Some advocate for a hybrid approach to policing privacy and competition concerns. These advocates argue that people are consciously choosing to trade at least some privacy for otherwise free and improved content and services. The separation of competition and consumer protection is an “artificial dichotomy,” as their goals are complementary: to converge and mutually support each other in the analysis of conduct harmful to consumers.⁷⁸

Under the hybrid approach, whereby data is considered a dimension of competition but data privacy is also protected for its own sake, regulations attempt to balance the costs and benefits of consumer protection of privacy against the impact on competition in those situations where “conduct-distorting commerce implicates both consumer protection and competition principles.”⁷⁹ For example, companies could adopt a “privacy-by-design” approach that involves building privacy protections into their business practices, such as collecting only the data needed for a specific business purpose or safely disposing data no longer in use.⁸⁰ Consumers could also be informed about companies’ data practices, and choices to limit data should be clearly and concisely described. This framework could promote competition and consumer protection principles, addressing consumer demands for privacy protections. Companies may be encouraged to entice consumers to use their products and services based, in part, on their privacy practices. If, for

⁷⁸ Harbour & Kaslov, *supra* note 74 at 773.

⁷⁹ Julie Brill, *Competition and Consumer Protection: Strange Bedfellows or Best Friends?*, ANTITRUST SOURCE, Dec. 2010, at 10, www.abanet.org/antitrust/at-source/10/12/Dec10-Brill12-21f.pdf.

⁸⁰ *Id.*

example, competitors agree to limit the use of certain sensitive data from marketing decisions, based on consumer demands, this could supersede concerns about harm to competition.⁸¹

In contrast, other advocates suggest that antitrust law is, overall, an inappropriate tool to regulate data privacy. These proponents believe that the goal of antitrust is to promote economic efficiency that enhances consumer welfare, not to address other types of harm.⁸² This theory argues that regulation must take trade-offs to consumers into account and recognize that modifying antitrust laws to encompass privacy concerns may make consumers worse off, especially those who do not share the same privacy preferences or are willing to trade some diminishment in privacy for increased quality or new offerings.⁸³ Instead, antitrust law should be used to protect process, not guarantee a particular result. Enforcers thus often hesitate to intervene simply because they dislike certain market outcomes (e.g., few tech companies holding a large swath of consumer data), but rather intervene only when firms are corrupting, or are likely to corrupt, the competitive process.

Should antitrust be used to regulate consumer privacy, these proponents argue for policymakers to focus on consumer welfare goals. First, these proponents disagree that having access to big data inherently leads to anticompetitive behavior or presents competitive concerns.⁸⁴ Indeed, consolidation across data platforms can create significant efficiencies and gains in

⁸¹ Julie Brill, Comm'r, Fed. Trade Comm'n, *The Intersection of Consumer Protection and Competition in the New World of Privacy*, COMPETITION POL'Y INT'L, Spring 2011, at 7, 10.

⁸² Maureen K. Ohlhausen & Alexander P. Okuliar, *Competition, Consumer Protection, and The Right [Approach] to Privacy*, 80 ANTITRUST L.J. 121, 151 (2015).

⁸³ *Id.* at 123.

⁸⁴ ANDRES V. LERNER, THE ROLE OF “BIG DATA” IN ONLINE PLATFORM COMPETITION 4–5 (2014), available at <http://ssrn.com/abstract=2482780> (maintaining that no data shows that online markets have “tipped” to dominant firms, due to the differentiated nature of online offerings and the fact that no one firm controls a significant share of data).

consumer welfare.⁸⁵ Protections should be based on the sensitivity and uses of data, not the mechanism through which it was collected, focusing, for example, on transparency and educating consumers on how their data is being used.⁸⁶ Second, these proponents believe that overbroad privacy regulations can chill innovation, so protection should be narrowly tailored. Privacy remedies that would require companies to share data with rival firms actually creates competition concerns.⁸⁷ The ability to amass data is merely an indicator of success, and companies should not be forced to share consumer data unless it is for a good reason. Instead, companies with large data assets should be encouraged to protect that data, allowing consumers to make an informed choice when they enter a transaction or use a product or service.

2. *Potential unintended consequences on competition and innovation*

a. Privacy regulations as potential barriers

Companies may face increased legal and compliance costs for complying with privacy regulations. Since 2016, when the European Parliament adopted the GDPR, the costs of compliance have ballooned for companies.⁸⁸ The combination of potential fines, compliance costs, and legal liability make the cost of GDPR compliance high for even the largest firms. Some studies

⁸⁵ Ohlhausen & Okuliar, *supra* note 82 at 151.

⁸⁶ *Id.*

⁸⁷ Statement of FTC Comm'r Noah Phillips, Keep It: Maintaining Competition in the Privacy Debate (July 27, 2018), available at https://www.ftc.gov/system/files/documents/public_statements/1395934/phillips_-_internet_governance_forum_7-27-18.pdf.

⁸⁸ GDPR Art. 3(2). The GDPR is a broad regulation, applying to the processing of personal data as well as any processing of non-EU data controllers whose entities are engaged in “the offering of goods or services . . . to such data subjects in the [EU]” or monitoring any such subjects’ behavior “as far as their behavior takes places within the [EU].” The GDPR came into force in the EU on May 25, 2018; some of the costs identified with compliance were incurred in getting prepared for the enforcement of GDPR.

have estimated that British firms have sunk \$1.1 billion and American companies have spent \$7.8 billion in GDPR compliance.⁸⁹

Privacy regulations can be especially burdensome for small and medium-sized firms. Larger established firms, which have access to leading data protection technologies and personnel with expertise in data protection laws, are in a better position to absorb these costs at the expense of smaller competitors and potential entrants. Very small businesses report they are not confident that they can meet the requirements of “one size fits all” regulation, like the GDPR, and such regulation will be overbroad to their detriment.⁹⁰ Similarly, small and medium-sized firms could bear significant costs for compliance with U.S. regulations.⁹¹ One study found, in a back-of-the-envelope analysis, that in complying with the California Consumer Privacy Act (CCPA), companies with fewer than twenty employees expected to bear \$50,000 on average for initial costs, and companies with more than five hundred employees expected \$2 million in average initial costs for compliance.⁹² According to some estimates, if Congress were to pass federal legislation that mirrors key provisions in the GDPR or CCPA, it could cost the U.S. economy \$122 billion per

⁸⁹ Oliver Smith, *The GDPR Racket: Who’s Making Money From This \$9bn Business Shakedown*, FORBES, May 8, 2018, available at <https://www.forbes.com/sites/oliversmith/2018/05/02/the-gdpr-racket-whos-making-money-from-this-9bn-business-shakedown/#6463d3c934a2>.

⁹⁰ Scott Ikeda, *Will New U.S. Privacy Regulations Be Too Expensive for Small Businesses?*, CPO MAGAZINE, Mar. 26, 2019, available at <https://www.cpomagazine.com/data-protection/will-new-u-s-privacy-regulations-be-too-expensive-for-small-businesses/>.

⁹¹ GDPR Art. 20; CCPA 1798.198.

⁹² STANDARDIZED REGULATORY IMPACT ASSESSMENT: CALIFORNIA CONSUMER PRIVACY ACT OF 2018 REGULATIONS, http://www.dof.ca.gov/Forecasting/Economics/Major_Regulations/Major_Regulations_Table/documents/CCP_A_Regulations-SRIA-DOF.pdf.

year.⁹³ As a result of these additional regulatory hurdles, newer firms, and smaller firms in adjacent markets, may find themselves disincentivized to enter the market and compete.

b. Data portability and interoperability regulations affecting incentive to innovate

Data portability requires common technical standards between firms to facilitate the transfer of data from one firm to another. The idea of allowing consumers to move their data from different platforms has gained support in public policy over the last few years. The right to data portability is one of the rights included in the GDPR.⁹⁴ In 2019, the U.S. Senate introduced the Augmenting Compatibility and Competition by Enabling Service Switching Act (the “ACCESS Act”), which requires platform “interoperability” as well as data portability.⁹⁵ Under the act, large tech platforms must let their users designate a trusted third-party service to manage their privacy and account settings and move their data to other services (thus requiring platforms to make their services interoperable).

Proponents of data portability and interoperability policies argue that portability is a tool to counteract the power of large platforms, which have a greater repository of consumer data. Without these policies, moving from a large tech platform to a competitor is difficult because incumbents hold consumers’ data and create high switching costs for consumers and entry barriers for competitors.⁹⁶ Increased data portability can reduce switching costs for consumers and

⁹³ Alan McQuinn & Daniel Castro, *The Costs of an Unnecessarily Stringent Federal Data Privacy Law*, INFORMATION TECHNOLOGY AND INNOVATION FOUNDATION (ITIF), Aug. 5, 2019, available at <https://itif.org/publications/2019/08/05/costs-unnecessarily-stringent-federal-data-privacy-law>.

⁹⁴ GDPR Art. 20.

⁹⁵ Press Release, Senators Introduce Bipartisan Bill to Encourage Competition in Social Media, Oct. 22, 2019, available at <https://www.warner.senate.gov/public/index.cfm/2019/10/senators-introduce-bipartisan-bill-to-encourage-competition-in-social-media>. The CCPA also offers a limited quasi-right of portability.

⁹⁶ Eric Null & Ross Schulman, *The Data Portability Act: More User Control, More Competition*, NEW AMERICA.ORG, Aug. 19, 2019, available at <https://www.newamerica.org/oti/blog/data-portability-act-more-user-control-more-competition/>.

therefore increase competition in the market. Robust data portability also promotes competition by allowing new entrants to access data they otherwise would not have, encouraging entry and competition with incumbent tech platforms that have greater market power. Firms that allow consumers to move their data have the incentive to attract customers, and facilitating data portability would attract new users if consumers are not “locked in” to a service.

Opponents of data portability and interoperability requirements argue that forcing firms to offer data portability has unintended consequences. First, implementing data portability can entail a complex set of regulations and standards. Data portability could incentivize companies to redirect spending on compliance costs that could otherwise be used to improve products or services (or privacy protections). The process of developing standards would be lengthy, costly, and almost inevitably favor large incumbents. Second, data portability might lead to increased market power for incumbent firms at the expense of smaller competitors. *See, e.g.,* Section III.c, *infra*. Incumbent firms could incentivize consumers to transfer significant volume of information from competitors and then use that data to undercut competitors. Incumbents may even take steps to increase switching costs for customers to prevent them from switching products, using practices like restrictive covenants to restrict high levels of switching, or even change the structure of data they make available to competitors. Third, regulations around data portability could also lead to the “death” or degradation in quality of free services. While switching between platforms may be frictionless for consumers, this may also reduce incentives for firms to offer a “free” platform—the benefits of any investments or improvements could be accessed by customers of competing platforms.⁹⁷ And some argue that free platforms such as Facebook, YouTube, and Snapchat may

⁹⁷ Ohlhausen & Okuliar, *supra* note 82 at 130.

move to exclusively paid models as a response to regulations.⁹⁸ Finally, aggregated data portability may allow competitors to access innovative and proprietary data analytics. Even if platforms still choose to rely on a free model, regulations could lead to reduced incentives to innovate or expand their platforms, leading to reductions in quality, such as reduced consumer choice or features. Companies may lose an incentive to invest in these analytics if they know it will be lost to their competitors via reversed engineering and data portability.

c. Preemptive regulations?

The consumer technology sector is fast-growing and characterized by short innovation cycles. It is hard to predict the future success of any new product—uncertainty abounds for the most sophisticated companies, and some argue this, too, should apply to enforcers, who are specialists in analyzing and enforcing antitrust law, and should not divine how new technologies related to privacy should develop and where they should be used.⁹⁹

More generally, dynamic competition can provide a useful counterweight to any anticompetitive concerns in the big data industry.¹⁰⁰ Regulation that erroneously equates “big” with “bad” could stymie innovation and dynamic competition among companies. What might appear to be competition within a market may very well be in reality competition for a new one.¹⁰¹

⁹⁸ Maurice Stucke & Ariel Ezrachi, *When Competition Fails to Optimize Quality: A Look at Search Engines*, 18 YALE J. OF LAW & TECH. 70 (2017).

⁹⁹ Statement of FTC Comm'r Maureen K. Ohlhausen Concerning Online Platforms and Market Power Part 2: Innovation and Entrepreneurship (2019), <https://docs.house.gov/meetings/JU/JU05/20190716/109793/HHRG-116-JU05-Wstate-OhlhausenM-20190716.pdf>.

¹⁰⁰ SEAN ELLIS & MORGAN BROWN, HACKING GROWTH, HOW TODAY'S FASTEST GROWING COMPANIES DRIVE SUCCESS 59–60 (2017) (noting the failure of Google Glass, Amazon's Fire Phone, and Microsoft's Zune music player).

¹⁰¹ See Bernard A. Nigro, Jr., Deputy Assistant Attorney General, U.S. Dep't of Justice, Remarks as Prepared for Delivery at The Capitol Forum and CQ: Fourth Annual Tech, Media & Telecom Competition Conference (Dec. 13, 2017) (“If we stretch antitrust law to create competition *within* the market, we risk undermining the incentive to compete *for* the market.” (emphasis in original)). Even in *United States v. Microsoft*, the court of

In the same vein, an attempt to innovate antitrust law to encourage competition in the big data industry may, ironically, result in discouraging innovation.¹⁰²

PART III: Government and Non-Government Enforcement

A. Monopolization and abuse of dominance

1. Overview: United States and European comparative approaches

Competition laws in the United States and Europe prohibit certain single-firm conduct. For example, both jurisdictions prohibit a single firm's conduct that harms competition by improperly creating or maintaining monopoly power, or that abuses the dominance of that single firm's monopoly power. These claims are known as "monopolization" and "abuse of dominance" respectively.

In both the United States and Europe, monopolization and abuse of dominance claims require a finding of substantial market power, that is, that the firm has or is likely to obtain substantial market power in a relevant market. In basic economic terms, market power refers to a firm's ability to profitably raise price above competitive levels for a sustained period of time. As a result, the market power requirement is a crucial screening mechanism for monopolization and abuse of dominance claims.

appeals noted that network effects may be counteracted by "technological dynamism." 253 F.3d at 50 ("[T]here is some suggestion that the economic consequences of network effects and technological dynamism act to offset one another, thereby making it difficult to formulate categorical antitrust rules absent a particularized analysis of a given market.").

¹⁰² Cf. Sokol & Comerford, *supra* note 38 at 1160 ("Antitrust enforcement agencies are well advised to proceed cautiously in areas of rapid innovation, in order to avoid stifling competition and the natural unfolding of the marketplace. . . . While an industry is in its relative infancy, it can be difficult to distinguish between procompetitive innovation and changes that are designed to (or actually do) stifle competition.").

Ordinarily, evaluation of market power involves defining a relevant market, and assessing whether the firm enjoys market power within that relevant market. Thus, the analysis considers market share within the defined relevant market, barriers to entry, and other economic factors.

Having substantial market power, or holding a dominant position, by itself is not illegal. Put another way, the market power requirement is a necessary—but not sufficient—condition for a monopolization or abuse of dominance claim. Rather, in addition to substantial market power, competition laws in the United States and Europe deem illegal conduct that is beyond “competition on the merits,” for example, “exclusionary” conduct that makes it impossible for equally or more efficient competitors to compete.

Conduct that both United States and European enforcers have scrutinized includes:

- **Tying and Bundling Practices.** When a firm uses its dominant position in one market to induce customers to purchase a second product, often as a condition for purchasing the first product. This practice gives the firm an advantage over an equally or more efficient competitor for the second product.
- **Foreclosure.** When a firm prevents competitors from accessing resources that they need to compete. These can include refusals to deal, discriminatory access, and preventing access to an essential facility.
- **Exclusive Dealing Arrangements.** When a firm requires an upstream or downstream partner to deal exclusively with the firm, thus impeding competitors from accessing downstream dealers or purchasing inputs to compete effectively.
- **Monopoly Leveraging.** When a firm uses monopoly power in one market to monopolize or attempt to monopolize another market.
- **Discriminatory Pricing.** When a firm alters the price for the same product in order to give certain downstream competitors an advantage over others.
- **Predatory Pricing.** When a firm uses below-cost pricing (or raises its rivals’ costs) to drive its competitors out of the market, and subsequently raises prices afterward for an extended time.

However, the United States and Europe adopt different approaches with respect to the **essential facilities** doctrine. European competition law places a “special responsibility” on dominant companies to share and to supply when a failure to do so would distort effective competition, although this duty is heavily contested.¹⁰³ In contrast, U.S. laws, as currently applied, do not impose a similar requirement. Rather, U.S. courts invoke the essential facilities doctrine only in extreme cases. Earlier cases applied the doctrine when (1) the monopolist controls access to an essential facility; (2) a competitor cannot reasonably duplicate the facility; and (3) it was feasible for the monopolist to grant access.¹⁰⁴ But the Supreme Court effectively added another requirement: that regulation had not addressed access to the essential facility at issue.¹⁰⁵

As a result, in the United States the essential facilities doctrine generally applies to situations in which the plaintiff and the defendant (i.e., the party controlling the essential facility) compete in a downstream market and the defendant possess substantial market power in that downstream market.¹⁰⁶ But in the EU, this is not a critical inquiry for applying the essential facilities doctrine. Further, in the United States, it is also considered easier to generate a business justification for a refusal to deal than in the EU.

2. *Issues related to market power that can arise from ownership of data*

One recent high-profile investigation of a large tech company by a government enforcer was the FTC’s investigation of Google’s search practices, which concluded in 2013. The FTC investigated search bias allegations against Google relating to whether Google unfairly preferences

¹⁰³ See European Court of Justice, Michelin ¶ 57 (322/81) E.C.R. 3461 (1983).

¹⁰⁴ See MCI Commc’ns Corp. v. AT&T, 708 F.2d 1081 (7th Cir. 1983).

¹⁰⁵ Verizon Commc’ns v. Law Offices of Curtis V. Trinko, 540 U.S. 398 (2004).

¹⁰⁶ See Intergraph Corp. v. Intel Corp., 195 F.3d 1346 (Fed. Cir. 1999).

its own content on the Google search results page and selectively demotes its competitors' content from those results. After conducting a nineteen-month review, the FTC Commissioners issued a unanimous decision in January 2013, finding that:

[T]he evidence presented at this time does not support the allegation that Google's display of its own vertical content at or near the top of its search results page was a product design change undertaken without a legitimate business justification. Rather, we conclude that Google's display of its own content could plausibly be viewed as an improvement in the overall quality of Google's search product. Similarly, we have not found sufficient evidence that Google manipulates its search algorithms to unfairly disadvantage vertical websites that compete with Google-owned vertical properties.¹⁰⁷

Although the FTC closed its investigation of Google's search bias allegations, the European Commission (EC) opened a trio of antitrust investigations against Google's Shopping, Android, and AdSense services. In 2017, the EC found that Google had "abused its market dominance as a search engine by giving an illegal advantage to another Google product, its comparison shopping service" by changing its search engine results to prioritize Google Shopping, Google's in-house European comparison-shopping website, over rival shopping businesses.¹⁰⁸ The Commission fined Google €2.42 billion for this violation.¹⁰⁹

¹⁰⁷ FED. TRADE COMM'N, STATEMENT OF THE FEDERAL TRADE COMMISSION REGARDING GOOGLE'S SEARCH PRACTICES *IN THE MATTER OF GOOGLE INC.*, FTC File Number 111-0163, Jan. 3, 2013, available at https://www.ftc.gov/sites/default/files/documents/public_statements/statement-commission-regarding-googles-search-practices/130103brillgooglesearchstmt.pdf. See also David Drummond, *The Federal Trade Commission Closes Its Antitrust Review, GOOGLE: THE KEYWORD*, Jan. 3, 2013, available at <https://googleblog.blogspot.com/2013/01/the-federal-trade-commission-closes-its.html>.

¹⁰⁸ Press Release, European Comm'n, Antitrust: Commission Fines Google €2.42 Billion for Abusing Dominance as Search Engine by Giving Illegal Advantage to Own Comparison Shopping Service, June 27, 2017, available at https://ec.europa.eu/commission/presscorner/detail/en/IP_17_1784.

¹⁰⁹ *Id.*

In 2018, the EC found that Google used its dominant positions in the markets for general internet search services, licensable smart mobile operating systems, and app stores for the Android mobile operating system to impose “three types of restrictions . . . on Android device manufacturers and network operators to ensure that traffic on Android devices goes to the Google search engine,” which allowed Google to use “Android as a vehicle to cement the dominance of its search engine” and “denied rivals the chance to innovate and compete on the merits.”¹¹⁰ In particular, the EC took issue with Google’s requirement for manufacturers to pre-install the Google Search app and browser app (Chrome) as a condition for licensing Google’s app store (the Play Store); Google’s payments to certain large manufacturers and mobile network operators on the condition that they exclusively pre-installed the Google Search app on their devices; and Google’s restrictions that prevented manufacturers wishing to pre-install Google apps from selling smart mobile devices running on alternative versions of Android that were not approved by Google (so-called “Android forks”).¹¹¹ The EC fined Google €4.34 billion for these violations.¹¹²

In 2019, the EC found that Google abused its market dominance in the market for online search advertising intermediation in Europe, and that Google restricted third-party websites that use its AdSense service from letting Google’s rivals to place their search ads on those websites.

¹¹⁰ The EC found that because Apple iOS and Blackberry phone OS are not available for licensing, mobile phone manufacturers have little choice besides using Android. That, together with the fact that Android OS accounted for more than 95% of the worldwide market (excluding China) for licensable smart mobile operating systems, led the EC to conclude that Google had a dominant position in licensing smartphone OS. See Press Release, European Commission, Antitrust: Commission Fines Google €4.34 Billion for Illegal Practices Regarding Android Mobile Devices to Strengthen Dominance of Google’s Search Engine, July 18, 2018, available at https://ec.europa.eu/competition/presscorner/detail/en/IP_18_4581.

¹¹¹ *Id.*

¹¹² *Summary of Commission Decision of 18 July 2018 (Case AT. 40099—Google Android)*, Official Journal of the European Union, Nov. 28, 2019, available at [https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52019XC1128\(02\)&from=EN](https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52019XC1128(02)&from=EN).

The EC's finding of Google's dominance in the relevant market was, in part, based on Google's high market share in the relevant period and the substantial barriers to entering the relevant market. Specifically, the EC stated: "The market is also characterized by high barriers to entry. These include very significant initial and ongoing investments required to develop and maintain general search technology, a search advertising platform, and a sufficiently large portfolio of both publishers and advertisers."¹¹³ The EC fined Google €1.49 billion for the violation.¹¹⁴

In more recent years, Amazon, Facebook, and Apple have also faced antitrust scrutiny from the EC and national competition authorities in Europe. In 2019, the EC announced a formal investigation into whether Amazon's use of sensitive data from independent retailers who sell on its marketplace is in breach of EU competition rules. Specifically, the EC noted that Amazon is not only a platform that provides a marketplace to independent sellers but also a retailer in that marketplace. The EC investigation focuses on whether Amazon uses competitively sensitive marketplace seller information to harm competition.¹¹⁵ In 2018, Bundeskartellamt, Germany's competition authority, launched an investigation into Amazon's treatment of third-party sellers, including allegedly withholding payments, blocking seller accounts without explanation, and using

¹¹³ Press Release, European Comm'n, Antitrust: Commission Fines Google €1.49 Billion for Abusive Practices in Online Advertising, Mar. 20, 2019, available at https://ec.europa.eu/commission/presscorner/detail/en/IP_19_1770.

¹¹⁴ *Id.*

¹¹⁵ Press Release, European Comm'n, Antitrust: Commission Opens Investigation into Possible Anti-competitive Conduct of Amazon, July 17, 2019, available at https://ec.europa.eu/commission/presscorner/detail/en/IP_19_4291. In 2020, the *Wall Street Journal* reported that "Amazon.com employees have used data about independent sellers on the company's platform to develop competing products, a practice at odds with the company's stated policies." Dana Mattioli, *Amazon Scooped Up Data From Its Own Sellers to Launch Competing Products*, WALL ST. J., Apr. 23, 2020, available at <https://www.wsj.com/articles/amazon-scooped-up-data-from-its-own-sellers-to-launch-competing-products-11587650015>.

seller's information.¹¹⁶ In 2019, Amazon settled with the German authority, agreeing to address those issues.¹¹⁷

The Bundeskartellamt launched an investigation of Facebook's processing of user and device-related data in 2016, which resulted in a 2019 ruling that Facebook used its dominant position in the market for social networks to persuade consumers to accept terms that allowed Facebook's use of their data.¹¹⁸ The Bundeskartellamt found that, but for Facebook's dominance, consumers would have rejected those terms, and the Bundeskartellamt ordered Facebook to stop tracking user information without consent.¹¹⁹ Facebook subsequently won a favorable appellate ruling from the Düsseldorf Higher Regional Court, which stated that it did not see any anticompetitive result from Facebook's data collection and processing.¹²⁰ As of the time of this report, the litigation is ongoing.

Following a complaint filed by Spotify in 2019, the EC is investigating whether Apple's App Store practices disadvantaged competing apps, and in particular, whether Apple has required

¹¹⁶ David Reid, *Amazon Is Being Investigated by the German Antitrust Authority*, CNBC, Nov. 29, 2018, available at <https://www.cnbc.com/2018/11/29/amazon-investigated-by-the-german-antitrust-authority.html>.

¹¹⁷ Stephanie Bodoni & Aoife White, *Amazon Settles German Antitrust Probe Ahead of EU Battle*, BLOOMBERG, July 17, 2019, available at <https://www.bloomberg.com/news/articles/2019-07-17/amazon-germany-reach-deal-to-end-antitrust-investigation>.

¹¹⁸ Case Summary, Bundeskartellamt, Facebook, Exploitative Business Terms Pursuant to Section 19(1) GWB for Inadequate Data Processing, Feb. 6, 2019, available at https://www.bundeskartellamt.de/SharedDocs/Entscheidung/EN/Fallberichte/Missbrauchsaufsicht/2019/B6-22-16.pdf?__blob=publicationFile&v=3.

¹¹⁹ Press Release, Bundeskartellamt, Bundeskartellamt Prohibits Facebook from Combining User Data from Different Sources, July 2, 2019, available at https://www.bundeskartellamt.de/SharedDocs/Meldung/EN/Pressemitteilungen/2019/07_02_2019_Facebook.html.

¹²⁰ Victory for Facebook as Düsseldorf Court Suspends the Bundeskartellamt's Decision, LEXOLOGY, Aug. 30, 2019, available at <https://www.lexology.com/library/detail.aspx?g=eb62ca02-bc17-4757-8ede-0dc8af0ec8b7>.

merchants to use Apple Pay in their apps instead of rival services.¹²¹ Similar lawsuits were filed in the United States by app developers and consumers, alleging that Apple engaged in anticompetitive conduct by only allowing the downloading of iPhone apps through Apple's official App Store and taking up to 30 percent commission from developers on the sale of apps.¹²²

Starting in 2019, U.S. antitrust agencies launched a new wave of antitrust investigations into large technology companies. In 2019, the attorneys general for forty-eight states as well the District of Columbia and Puerto Rico joined to announce their launch of investigations into the market power and corporate behavior of big technology companies, focusing on Facebook and Google.¹²³ One week after the announcement of the joint antitrust investigation by the state attorneys general, the U.S. House of Representatives Judiciary Committee issued letters directly to Jeff Bezos of Amazon, Tim Cook of Apple, Mark Zuckerberg of Facebook, and Larry Page of Google, announcing its investigation of competition in digital markets and requesting for all communications to and from eight executives at Amazon, fourteen at Apple, fifteen at Facebook, and fourteen at Google.¹²⁴ The House Judiciary Committee stated in its letters that the focus of its

¹²¹ Brussels Poised to Probe Apple over Spotify's Fees Complaint, FIN. TIMES, May 5, 2019, available at <https://www.ft.com/content/1cc16026-6da7-11e9-80c7-60ee53e6681d>; Foo Yun Chee, Apple Pay in EU Antitrust Spotlight as Regulators Seek Details, REUTERS, Oct. 29, 2019, available at <https://www.reuters.com/article/us-eu-apple-antitrust/apple-pay-in-eu-antitrust-spotlight-as-regulators-seek-details-idUSKBN1X829Y>.

¹²² See Apple Inc. v. Pepper, 139 S. Ct. 1514 (2019); Jimmy Hoover, It's Kavanaugh v. Gorsuch in Apple Antitrust Case, LAW360, May 14, 2019, available at <https://www.law360.com/articles/1159323>; Khorri Atkinson, Hagens Berman Proposed as Apple App Store Class Lead, LAW360, Sept. 27, 2019, available at <https://www.law360.com/articles/1203373>.

¹²³ Steve Lohr, Google Antitrust Investigation Outlined by State Attorneys General, N.Y. TIMES, Sept. 9, 2019, available at <https://www.nytimes.com/2019/09/09/technology/google-antitrust-investigation.html>.

¹²⁴ Competition in Digital Markets Document Request 9.13.19, Sept. 13, 2019, available at <https://judiciary.house.gov/news/documentsingle.aspx?DocumentID=2209>; Steve Lohr, House Antitrust Panel Seeks Documents From 4 Big Tech Firms, N.Y. TIMES, Sept. 13, 2019, available at <https://www.nytimes.com/2019/09/13/technology/amazon-apple-facebook-google-antitrust.html>.

investigation is “to examine (1) competition problems in digital markets; (2) whether dominant firms are engaging in anti-competitive conduct online; and (3) whether existing antitrust laws, competition policies, and current enforcement levels are adequate to address these issues.”¹²⁵

In 2019, the attorneys generals from New York, Colorado, Florida, Iowa, Nebraska, North Carolina, Ohio, Tennessee, and the District of Columbia announced a joint investigation into “whether Facebook has stifled competition and put users at risk” and “to determine whether Facebook’s actions may have endangered consumer data, reduced the quality of consumers’ choices, or increased the price of advertising.”¹²⁶

In 2020, the FTC began retrospective examinations of past acquisitions made by large technology companies, issuing orders to Alphabet (including Google), Amazon, Apple, Facebook, and Microsoft to provide the FTC with information and documents relating to prior acquisitions not reported to the antitrust agencies under the Hart-Scott-Rodino (HSR) Act.¹²⁷ The FTC stated that one of the objectives of this investigation is to assess whether large tech companies are making potentially anticompetitive acquisitions of nascent or potential competitors that fall below HSR filing thresholds.¹²⁸

¹²⁵ Competition in Digital Markets Document Request 9.13.19, Sept. 13, 2019, *available at* <https://judiciary.house.gov/news/documentsingle.aspx?DocumentID=2209>.

¹²⁶ Press Release, NY Att’y Gen., AG James Investigating Facebook for Possible Antitrust Violations, Sept. 6, 2019, *available at* <https://ag.ny.gov/press-release/2019/ag-james-investigating-facebook-possible-antitrust-violations>.

¹²⁷ Press Release, Fed. Trade Comm’n, FTC to Examine Past Acquisitions by Large Technology Companies, Feb. 11, 2020, *available at* <https://www.ftc.gov/news-events/press-releases/2020/02/ftc-examine-past-acquisitions-large-technology-companies>.

¹²⁸ *Id.*

3. *Government enforcement and private actions involving monopolization and abuse of dominance allegations against large technology companies*

A threshold question in antitrust inquiries involving digital markets and platforms is the issue of market power. Can there be platform monopolies? As discussed in Section II.b, *supra*, key economic features of platforms include economies of scale, indirect network effects, and platform differentiation. These features affect the range of optimal antitrust policy. As always, assessments of market power must be grounded in the facts of each case and consider the competitive dynamics of the industries involved. In particular, relevant market definitions for platform services need to take into account multi-homing and network competition. For digital platforms, market share and pricing may not be accurate surrogates for determining market power because of how rapidly markets can shift. Conversely, free or even negative pricing (e.g., rewards for users) on one side of a multi-sided platform is not necessarily evidence of predation, as pricing on both sides of the platform should be considered. Similarly, exclusive contractual terms involving digital platforms reflect competitive necessities for protecting investments, rather than evidence of exclusionary conduct.

Another question that often arises in market power inquiries involving digital platforms or services is whether a firm has a data monopoly. There are several challenges in carrying out that inquiry in practice. As a threshold matter, even if there were a data market where data is transacted from one firm to another,¹²⁹ that market would likely not be a unitary one. That is, the data relevant for AI for self-driving cars would likely not be the same data set relevant for credit decisions. See Section II.b.i, *supra*. The following factors are likely to be relevant for inquiries of whether a firm has a data monopoly:

¹²⁹ There is no current market for full data sets such as contemplated here.

- There may be alternatives to the data at issue. For example, governments make available to the public at no cost a variety of data that may be used to develop AI applications.¹³⁰ Moreover, myriad existing data and emerging data sources may exist because new products and services can generate new data sources, and because there may be many firms specializing in collecting and trading data. Adding to the complication is that the myriad of existing and emerging data sources may make it difficult to calculate market shares.
- Platforms may not have control over the data they collect. For example, the right of data portability provided under Article 20 of the EU’s GDPR and other national and local laws¹³¹ allows customers to retain greater control over their data, and firms can dynamically bid for access.
- Shelf-life for data may be short. Even if a company currently has the most extensive dataset, much of that data may become obsolete after a short time. As a result, even if one could measure market share and even if there was market concentration at a specific point in time, that might not shed any light on future market share/concentration.
- Data needs to be processed and analyzed before it can yield valuable information. To that end, data may have little effect on competition. Rather, the availability of and accessibility to the technology for processing data (i.e., AI – technology and personnel) may present a more substantial constraint to new entrants than data.
- It is also unclear what the relevant geographic market(s) might be for assessing data competition. While the market may be global since data can be collected, stored, and used in multiple national jurisdictions, certain data may be subject to data localization and cross-border transfer restrictions, creating localized data markets.¹³² Proper assessment of relevant geographic markets for data in each case should account for the industry conditions, the way data at issue is used, and what alternatives can act as economic substitutes.

¹³⁰ See, e.g., Federal Register, Request for Comments on the Cross-Agency Priority Goal: Leveraging Data as a Strategic Asset, Docket ID USBC-2018-0011, available at <https://www.federalregister.gov/documents/2018/06/27/2018-13768/request-for-comments-on-the-cross-agency-priority-goal-leveraging-data-as-a-strategic-asset>. There are also Freedom of Information Act requests, Company registries, etc.

¹³¹ E.g., California’s Consumer Privacy Act of 2018, Cal. Civ. Code §§1798.100–1798.198.

¹³² See, e.g., Russia, Federal Law No. 242-FZ of July 21, 2014 on Amending Some Legislative Acts of the Russian Federation in as Much as It Concerns Updating the Procedure for Personal Data Processing in Information-Telecommunication Networks, <https://pd.rkn.gov.ru/authority/p146/p191/> (official translation in English); *Cyber Security Law of the People’s Republic of China* (Article 37) and draft *Measures for Security Assessment of Personal Information and Important Data Cross-Border Transfer*, and *Information Security Technology - Guidelines for Data Cross-Border Transfer Security Assessment*.

B. Mergers and acquisitions

The predominant tool for competition law with respect to mergers and acquisition is government review. Common concerns about mergers in digital markets relate to the risk that an incumbent firm acquires new or potential future rivals. The pricing models of multi-sided markets, particularly “free” services, and ramp up to monetizing products that first become highly successful before generating much revenues, means that many mergers that might raise significant competition issues do not exceed merger notification thresholds that are set according to revenue.

Some jurisdictions such as Germany have already introduced new thresholds based on the value of the transaction.¹³³ In addition, the German Draft Bill (*see* Section III.d, *infra*) now proposed would allow the Bundeskartellamt to order certain companies to notify every merger (subject to a minimum revenue threshold) where there are indications that future concentrations may restrict domestic competition.¹³⁴ In the United States, legislators have proposed creating higher merger thresholds for digital firms,¹³⁵ and academics have proposed shifting presumptions for mergers and acquisitions in digital markets.¹³⁶

The following is a summary of federal merger cases in the United States that implicate big data, machine learning, and artificial intelligence.

Automatic Data Processing/AutoInfo (1995)

In 1995 to 1996, Automatic Data Processing (ADP)’s acquisition of AutoInfo raised concerns that the firm would have an “information monopoly” on the systems used by scrapyards to trade salvage. This acquisition gave ADP control over the market for auto salvage yard

¹³³ Press Release, Bundeskartellamt, Joint Guidance on New Transaction Value Threshold in German and Austrian Merger Control Submitted for Public Consultation, May 14, 2018, *available at* https://www.bundeskartellamt.de/SharedDocs/Meldung/EN/Pressemitteilungen/2018/14_05_2018_TAW.html.

¹³⁴ Section 39a of the German Draft Bill.

¹³⁵ *See* Merger Enforcement Improvement Act, S.306 (116th Congress).

¹³⁶ *See* J. Baker et al., *Five Principles for Vertical Merger Enforcement Policy*, ANTITRUST, Summer 2019.

information and management systems. These systems provided information that salvage yards use to take inventory of, buy, and sell parts. These systems included the ability of salvage yards to search a central database that pools inventory of subscribing yards. Most importantly, the information from this system could be collected and later sold.¹³⁷ However, the FTC’s successful lawsuit against ADP, which resulted in a fine of \$2.97 million, was not based on allegations of anticompetitive behavior. It was based on a violation of the HSR Act, which requires merging companies to submit, under item 4(c) of the HSR form, any documents they produced while assessing the benefits of the transaction. ADP did not file any 4(c) documents, even though the court later discovered that ADP did possess documents that it should have provided, including some that substantiated accusations the firm had behaved anticompetitively.

DoubleClick/Abacus (1999)

In the early days of the internet, many favored the development of online advertising models that could protect privacy. DoubleClick’s business model did not rely on the collection of personal information. In 1999, DoubleClick proposed to acquire Abacus, the largest catalog database firm in the United States. Abacus collected detailed information about consumers’ offline purchases. At the end of 1998, the Abacus database contained over 88 million detailed buyer profiles compiled from records of over 2 billion catalog purchasing transactions. In its investigation, the FTC analyzed whether DoubleClick used “personal identifying information” from Abacus’ database to create user profiles for target advertising.¹³⁸ The FTC, after eleven months of investigation, cleared DoubleClick of allegations it had invaded consumers’ privacy, arguing that DoubleClick never used or disclosed consumers’ personal identifying information for purposes other than those disclosed in its privacy policy.

PayPal/eBay (2002)

Data-related efficiencies was a key point in the DOJ’s clearance of eBay’s acquisition of PayPal. The merging companies both provided person-to-person payment systems used to complete transactions in connection with eBay auctions. Investigation concerns included eBay’s ability to control the use of PayPal on other sites. However, the DOJ concluded that the integration of the two companies “would make transactions more convenient for eBay

¹³⁷ Press Release, Fed. Trade Comm’n, FTC Challenges ADP/Autoinfo Merger, Nov. 14, 1996, available at <https://www.ftc.gov/news-events/press-releases/1996/11/ftc-challenges-adpautoinfo-merger>.

¹³⁸ Letter from Joel Winston, Acting Associate Director, Fed. Trade Comm’n, to Christine Varney, Esq., Hogan & Hartson, Jan. 21, 2001.

buyers and also improve the detection of fraud by combining the information that had been separately amassed by the two companies.”¹³⁹

Google/DoubleClick (2007)

Google already dominated search advertising, and both companies competed for online display advertising, although they concentrated on slightly different parts of the market. Both also held vast amounts of data. Opponents of the merger argued that the combination of this data raised privacy concerns and would give Google’s relevant ad intermediation product, AdSense, a competitive advantage over advertising rivals. In its investigation, the FTC analyzed relevant online advertising markets and found that all online advertising does not constitute a relevant antitrust market. This is because advertisers purchase different types of inventory for different purposes. Furthermore, AdSense was a leading provider of contextual advertising, and DoubleClick neither provided contextual advertising nor acted as an intermediary.¹⁴⁰ On the other hand, the dissenting statement highlighted DoubleClick’s recent reentry into the intermediation market. In the end, the FTC voted 4–1 to close its investigation of Google’s proposed acquisition of DoubleClick after a thorough examination of the evidence bearing on the transaction. One of the arguments was that the evidence indicates that neither the data available to Google, nor the data available to DoubleClick, constitutes an essential input to a successful online advertising product.

Reed Elsevier/ChoicePoint (2008)

In 2008, the FTC challenged the \$4.1 billion acquisition of ChoicePoint, a data aggregation company, by Reed Elsevier, a global provider of various professional information services. Although both companies provided many other products and services, both offered a subscription service to law-enforcement agencies to access public and nonpublic information on individuals and businesses. The FTC found that the merger would stifle competition between these competing offers to law enforcement by bringing them under a single owner, and required ChoicePoint to divest one of its key products, CLEAR, to Thompson Reuters, a competing information-service provider. Without divestiture, Reed Elsevier’s acquisition of

¹³⁹ U.S. DEP’T OF JUSTICE & FED. TRADE COMM’N, COMMENTARY ON HORIZONTAL MERGER GUIDELINES (Mar. 2006), *available at* <https://www.justice.gov/atr/commentary-horizontal-merger-guidelines>.

¹⁴⁰ Press Release, Fed. Trade Comm’n, Federal Trade Commission Closes Google/DoubleClick Investigation, Dec. 20, 2007, *available at* <https://www.ftc.gov/news-events/press-releases/2007/12/federal-trade-commission-closes-googledoubleclick-investigation>.

ChoicePoint would allegedly give Reed Elsevier control over public and nonpublic information about individuals and businesses, including information regarding credit data, criminal records, motor vehicles, property, and employment records.¹⁴¹

Microsoft/Yahoo! (2008)

The DOJ investigated and did not challenge the companies' agreement to combine their back-end search and paid search advertising technology. Combining back-end search and paid search advertising would be more likely to increase competition by creating an alternative to Google. The agency analyzed the relevant harm to and control of data of users of internet search functions, paid search advertisers, internet publishers and distributors of search, and paid search advertising technology.¹⁴² The agency concluded that the transaction would "enhance Microsoft's competitive performance because it will have access to a larger set of [search] queries, which should accelerate the automated learning of Microsoft's search and paid search algorithms."¹⁴³ The transaction would thereby create a more viable competitive alternative to Google.

Dun & Bradstreet/Quality Education Data (2010)

The FTC objected to the acquisition of QED, a company offering marketing services in the education sector, by MDR, a subsidiary of the business-information provider Dun & Bradstreet. The FTC alleged that the parties "were the only significant U.S. suppliers of [K-12] educational marketing data," and the merger would have created a monopoly in this market. The data sold by these companies is used to sell books, educational materials, and other products to teachers and other educators nationwide. Control over this data would allow Dun & Bradstreet power over not only access to data, but a say in how and what products are

¹⁴¹ Press Release, Fed. Trade Comm'n, FTC Challenges Reed Elsevier's Proposed \$4.1 Billion Acquisition of ChoicePoint, Inc., Sept. 16, 2008, available at <https://www.ftc.gov/news-events/press-releases/2008/09/ftc-challenges-reed-elseviers-proposed-41-billion-acquisition>.

¹⁴² Press Release, U.S. Dep't of Justice, Statement of the Department of Justice Antitrust Division on Its Decision to Close Its Investigation of the Internet Search and Paid Search Advertising Agreement Between Microsoft Corporation and Yahoo! Inc., Feb. 18, 2010, available at <https://www.justice.gov/opa/pr/statement-department-justice-antitrust-division-its-decision-close-its-investigation-internet>.

¹⁴³ Gregory Luib & Mike Cowie, *Big (But Not Bad) Data and Merger Efficiencies*, LEXOLOGY, Jan. 28, 2020, available at <https://www.lexology.com/library/detail.aspx?g=3712daef-e9df-4584-83c3-ccfe465ea0f4>.

sold to educators.¹⁴⁴ In the final settlement, MDR agreed to divest some assets to MCH Strategic Data, to preserve competition in the market.

Costar/LoopNet (2011)

Costar, the largest provider of commercial real estate information services in the United States, acquired LoopNet, owner of the most-used commercial real estate information database in the country. The FTC challenged the transaction and required CoStar to sell some of LoopNet's stake in Xceligent, another provider with a business model closely resembling CoStar's, and which received data and financial investment from LoopNet. Both CoStar and Xceligent aggregate commercial real estate listings and property-specific information nationwide.¹⁴⁵

Google/ITA (2011)

The Antitrust Division of the DOJ filed a lawsuit to block Google's acquisition of ITA Software, producer of QPX. The QPX software conducts searches for air travel fares, schedules, and availability. The DOJ's complaint alleged that Google's use of ITA's software to provide its own price comparison service, which would compete with these firms, would give it the means and the incentive to cut off their access to QPX. The DOJ and Google reached a settlement whereby Google would be allowed to purchase ITA on the condition it licenses QPX to its competitors for five years. The DOJ's focus was not that the data itself would give Google too much market power, but that access to QPX was excludable. The settlement allowed airfare websites to use this software on commercially reasonable terms.¹⁴⁶

Bazaarvoice/PowerReviews (2012)

In Bazaarvoice/PowerReviews, Bazaarvoice was the market-leading provider of ratings and review platforms that enable manufacturers and retailers to collect, organize, and display

¹⁴⁴ See Press Release, Fed. Trade Comm'n, FTC Challenges Dun & Bradstreet's Purchase of Competing Education Data Provider, May 7, 2010, available at <https://www.ftc.gov/news-events/press-releases/2010/05/ftc-challenges-dun-bradstreets-purchase-competing-education-data>.

¹⁴⁵ Press Release, Fed. Trade Comm'n, FTC Places Conditions on CoStar's \$860 Million Acquisition of LoopNet, Apr. 26, 2012, available at <https://www.ftc.gov/news-events/press-releases/2012/04/ftc-places-conditions-costars-860-million-acquisition-loopnet>.

¹⁴⁶ Press Release, U.S. Dep't of Justice, Justice Department Requires Google Inc. to Develop and License Travel Software in Order to Proceed with Its Acquisition of ITA Software Inc., Apr. 8, 2011, available at <https://www.justice.gov/opa/pr/justice-department-requires-google-inc-develop-and-license-travel-software-order-proceed-its>.

consumer-generated product reviews and ratings. Bazaarvoice and PowerReviews were the two largest providers of ratings and review platforms in this space. In 2013, the DOJ filed a lawsuit seeking to restore the competition that was extinguished by the transaction. The agreed-upon remedy required Bazaarvoice to sell all of the PowerReviews assets to a divestiture buyer, among other things, to allow for the divestiture buyer to quickly achieve the competitive position that PowerReviews would have occupied.¹⁴⁷

Nielsen Holdings/Arbitron (2013)

The FTC sued Nielsen, an audience-measurement company, because it feared Nielsen's acquisition of Arbitron, a provider of cross-platform ratings services, would allow Nielsen to become a nationwide monopoly provider of cross-platform audience-ratings services, a market that does not exist in the United States, but which Nielsen and Arbitron would have been positioned to develop. Nielsen was a leading provider in global media measurement and research services, and provides television, online, mobile, and cross platform audience measuring services to media companies. Arbitron was also a media measurement and research firm that provides radio rating services. The FTC alleged that combining both platforms to create a cross-platform rating service would have caused an uneven playing-field in the ability to provide this data to media companies.¹⁴⁸

Google/Nest Labs (2014)

In 2014 Google announced that it would pay \$3.2 billion in cash to purchase Nest Labs Inc. Nest Labs is the manufacturer of a home thermostat that links to the internet. Unlike its predecessors, Nest's device monitors residents' behavioral patterns, including temperature preferences and comings and goings to optimize heating and cooling over the day. The company later introduced a smoke and carbon monoxide detector and a security camera that also collect data. At the time of the merger, privacy advocates worried that the merger would give Google intimate insight into the private offline behavior of Nest customers, giving it an unprecedented ability to target them for advertising. The FTC disagreed, quickly deciding not

¹⁴⁷ Press Release, U.S. Dep't of Justice, Justice Department and Bazaarvoice Inc. Agree on Remedy to Address Bazaarvoice's Illegal Acquisition of PowerReviews, Apr. 24, 2014, available at <https://www.justice.gov/opa/pr/justice-department-and-bazaarvoice-inc-agree-remedy-address-bazaarvoice-s-illegal-acquisition>.

¹⁴⁸ Press Release, Fed. Trade Comm'n, FTC Puts Conditions on Nielsen's Proposed \$1.26 Billion Acquisition of Arbitron, Sept. 20, 2013, available at <https://www.ftc.gov/news-events/press-releases/2013/09/ftc-puts-conditions-nielsens-proposed-126-billion-acquisition>.

to challenge the merger. Nest Labs promised not to share its data with Google without users' permission.¹⁴⁹

CoreLogic/DataQuick (2014)

The FTC intervened in CoreLogic's acquisition of DataQuick. Both CoreLogic and DataQuick were providers of property information and analytics to the real estate, mortgage lending, and secondary investor markets in the United States. They were also two of the only three providers of national assessor and recorder bulk data. Although much of the data in question is generated regionally by many different companies, the FTC argued that the merger would have created a monopoly on national data because simply aggregating the available regional data did not provide national coverage. CoreLogic agreed to license some of its national bulk data to Renwood RealtyTrac, a competitor, in order to strengthen that firm and improve competition in this field. The shift in license to RealtyTrac halts DataQuick's opportunity to control a majority of national assessor and recorder bulk data as well as several other ancillary data sets.¹⁵⁰ The competition issue at the heart of this case was not the amount of data the companies held, but the reduced competition in the market to sell this information that would have occurred through the proposed merger. Therefore, the FTC cleared the transaction with a database divestiture.

Facebook/WhatsApp (2014)

Facebook uses the data generated by its network to offer better services to both users and advertisers. WhatsApp was a rival cross-platform messaging service that was rapidly gaining new users. Unlike Facebook, WhatsApp did not sell advertising space nor collect large amounts of personal data on its users. Instead it charged some users a small fee. When Facebook proposed to acquire WhatsApp in 2014, many privacy advocates worried that the merger would eliminate a main challenger to Facebook and reduce options for users who valued privacy. The FTC approved Facebook's \$19 billion dollar acquisition WhatsApp, stressing that WhatsApp must honor its commitment to maintain its pre-Facebook privacy practices. These policies include refraining from collecting names, emails addresses, or other

¹⁴⁹ Rolfe Winkler & Alistair Barr, *Nest to Share User Information with Google for the First Time*, WALL ST. J., June 24, 2014, available at <https://blogs.wsj.com/digits/2014/06/24/nest-to-share-user-information-with-google-for-first-time/>.

¹⁵⁰ Press Release, Fed. Trade Comm'n, FTC Puts Conditions on CoreLogic, Inc.'s Proposed Acquisition of DataQuick Information Systems, Mar. 24, 2014, available at <https://www.ftc.gov/news-events/press-releases/2014/03/ftc-puts-conditions-corelogic-incs-proposed-acquisition-dataquick>.

information from its users' mobile address book or contact lists other than mobile phone numbers. Without this agreement, Facebook would have had access to hundreds of millions of more user profiles that it could sell or share otherwise.¹⁵¹

Microsoft/LinkedIn (2016)

The investigation addressed data access and innovation of LinkedIn data that could, in theory, be used with Microsoft's machine learning capabilities to improve lead generation capabilities of Microsoft's Dynamics customer relationship management (CRM) software. The FTC found that the merged entity would not have the ability to foreclose competing providers of CRM software solutions if it reduced access to LinkedIn full data because it would be unlikely to negatively affect the overall availability of substitutable data required for machine learning in CRM software solutions. Therefore, the FTC cleared the transaction.¹⁵²

CVS Health/Aetna (2018)

U.S. District Judge Richard Leon, before approving the settlement that allowed the merger, explained that it offered substantial efficiencies, including efficiencies driven by data integration. One of the major problems plaguing the U.S. healthcare system is that information is siloed. For example, physicians and hospitals may lack access to pharmacy claims data. Pharmacies may lack access to medical records. These inefficiencies can harm patients and lead to higher-cost, lower-quality care. Both CVS Health and Aetna have a significant share of the market in the sale of Medicare Part D prescription drug plans. Although inefficiencies from information silos could be solved by this merger, it could lead to anticompetitive practices in the control of these subsets of data of millions of healthcare members nationwide.¹⁵³

¹⁵¹ Letter from Jessica Rich, Director, Bureau of Consumer Protection, Fed. Trade Comm'n, to Erin Egan, Chief Privacy Officer, Facebook, Inc., and to Anne Hoge, General Counsel, WhatsApp Inc., Apr. 10, 2014 (on file with author).

¹⁵² Daniel Bitton & Leslie Overton, *United States – E-commerce and Big Data: Merger Control*, GLOBAL COMPETITION REV., Oct. 15, 2019, available at <https://globalcompetitionreview.com/insight/e-commerce-competition-enforcement-guide-second-edition/1209650/united-states-%E2%80%93-e-commerce-and-big-data-merger-control>.

¹⁵³ Press Release, U.S. Dep't of Justice, Justice Department Requires CVS and Aetna to Divest Aetna's Medicare Individual Part D Prescription Drug Plan Business to Proceed with Merger, Oct. 10, 2018, available at <https://www.justice.gov/opa/pr/justice-department-requires-cvs-and-aetna-divest-aetna-s-medicare-individual-part-d>.

C. Multi-firm conduct

Government and non-government litigants often challenge collusive behavior by competitors as a violation of competition laws. As technology advances and the cost of storing and analyzing data decreases, companies are turning increasingly to computer-driven algorithms in order to optimize business decisions. This raises the question of how those algorithms intersect with traditional prohibitions on conspiracy and collusion. While the applications of algorithmic decision-making are broad, the focus of this section will be on the use of computer-driven algorithms for the purpose of pricing goods. In a typical case, a company collects real-time pricing data, including competitor pricing data, and utilizes an algorithm to process the information and respond in real time to changes in market conditions. While this practice may have certain procompetitive benefits, antitrust regulators and private (i.e., non-government) litigants have challenged firms that have allegedly used pricing algorithms in anticompetitive, collusive ways. The sections below discuss three forms of algorithm-driven collusion that have drawn criticism from regulators in the United States and abroad: (1) explicit, (2) hub and spoke, and (3) tacit.

1. *Explicit collusion*

When parties agree explicitly to collude and maintain an anticompetitive policy, typically agreeing on price or supply, it is a direct and intentional antitrust violation. The algorithms that help increase market efficiency and provide procompetitive benefits can also be used to enforce the collusive agreement by quick detection of any deviation from the agreed terms and programmatic retaliation. For example, an algorithm that allows a supplier to monitor its competitors' prices and react competitively to price drops can also be used as an enforcement

device to detect defections and quickly retaliate. The programmatic nature of the enforcement mechanism increases the agreement's stability.¹⁵⁴

The market structure, demand factors, and supply factors will have an impact on the likelihood of an explicit collusion enforced with algorithms. Specifically, market transparency and the frequency of transactions *increase* the likelihood of a collusion since the algorithms can detect a defection and suppliers can react. In contrast, a market characterized with constant innovation will *decrease* the likelihood of a collusive agreement since it reduces the present value of the collusion (the product is constantly changing) and reduces the ability of the less innovative firms to retaliate. Similarly, a market characterized by a large degree of product or service differentiation between suppliers will *decrease* the likelihood of a collusion since deviations might be harder to detect and the value of collusion could vary substantially between the parties due to their product differences.¹⁵⁵

Collusions are typically not stable in markets characterized with large demand or supply fluctuations or other factors that require frequent price or supply adjustments since they would require multiple agreement changes, meetings, or other communications.¹⁵⁶

The main differentiator between algorithmic collusion, per-se antitrust violation, and other potentially lawful algorithm-based conduct examples discussed below is the presence of an

¹⁵⁴ See ARIEL EZRACHI & MAURICE E. STUCKE, VIRTUAL COMPETITION 35–82 (Harvard University Press, 2016). See also Statement of FTC Comm'r Maureen K. Ohlhausen, Should We Fear the Things That Go Beep in the Night? Some Initial Thoughts on the Intersection of Antitrust Law and Algorithmic Pricing, Remarks at the Concurrences Conference on Antitrust in the Financial Sector, 8 (May 23, 2017), available at https://www.ftc.gov/system/files/documents/public_statements/1220893/ohlhausen_-_concurrences_5-23-17.pdf

¹⁵⁵ OECD, ALGORITHMS AND COLLUSION: COMPETITION POLICY IN THE DIGITAL AGE, 20–24 (2017), available at www.oecd.org/competition/algorithms-collusion-competition-policy-in-the-digital-age.htm, accessed on May 25, 2020.

¹⁵⁶ *Id.* at 22–23.

agreement between parties to collude, whether in oral or written form. While proven communications or whistleblowers are not required for the court to find parties engaged in a collusive agreement,¹⁵⁷ it is the main vehicle for law enforcements to prove the presence of the collusion. For most cases, analysis of the code allegedly used to enforce the collusion is not sufficient to prove unlawful conduct since, as mentioned before, the same algorithms can be used for both lawful and unlawful purposes.

In the United States, the DOJ has successfully prosecuted cases of overt, algorithmic-driven collusion. For example, in July 2015, an e-commerce seller in the United States was charged with, and pled guilty to, conspiring to fix the prices of posters sold through Amazon Marketplace. According to the charge by the DOJ, “[t]o implement their agreements, the defendant and his co-conspirators adopted specific pricing algorithms for the sale of certain posters with the goal of coordinating changes to their respective prices and wrote computer code that instructed algorithm-based software to set prices in conformity with this agreement.”¹⁵⁸ Three-and-a-half years later, in January 2019, the DOJ (with the assistance of the FBI) concluded its investigation and prosecution of the online wall décor industry with the conviction of another co-conspirator.¹⁵⁹ This case is considered the first case targeting e-commerce and a proven conspiracy implemented with the use of algorithms.

¹⁵⁷ See Ruling, Interstate Circuit, Inc. v. United States, Feb. 13, 1939.

¹⁵⁸ Press Release, U.S. Dep’t of Justice, Former E-Commerce Executive Charged with Price Fixing in the Antitrust Division’s First Online Marketplace Prosecution, Apr. 6, 2015, available at <https://www.justice.gov/opa/pr/former-e-commerce-executive-charged-price-fixing-antitrust-divisions-first-online-marketplace>.

¹⁵⁹ Mark L. Krotoski & Y. Frank Ren, *Case Highlights DOJ Focus, Extradition Efforts in Ecommerce Price-Fixing Conspiracy*, MORGAN LEWIS, Feb. 5, 2019, <https://www.morganlewis.com/pubs/case-highlights-doj-focus-extradition-efforts-in-ecommerce-price-fixing-conspiracy>.

Outside the United States Greece's antitrust regulator, the Hellenic Competition Commission, fined retailer Carrefour Marinopoulos €12.5 million in 2010 for "resale price maintenance," requiring its franchisees to follow recommended sales prices. It was alleged that Carrefour's IT system enabled the franchisor to monitor any deviations from the recommended sales price by franchisees and made individual price management difficult and time-consuming, effectively enabling Carrefour to enforce a collusive price across its franchise.¹⁶⁰

Similar to the Carrefour case, regulators in the EU prohibit (or allow at a narrow extent) the use of most-favored nation (MFN) clauses by online platforms, arguing that such clauses dampen price competition across sale channels.¹⁶¹ MFN clauses imposed by online marketplace platforms such as Amazon, Booking.com, and Expedia require the vendors to refrain from offering their products or services at lower prices by other distribution channels. While MFN clauses are not generally prohibited in the United States, regulators have expressed concerns when they are present in agreements governing online platforms, and the party imposing the MFN utilizes algorithms to detect defections and enforce penalties over violations.¹⁶² Such growing concerns led Amazon in early 2019 to abandon its "Price Parity" policy, which prohibited third-party sellers on its platform in the United States from selling the same products at a lower price elsewhere

¹⁶⁰ Julie Zeveloff, *Carrefour Marinopoulos Fined €12.5M For Price-Setting*, LAW360, July 15, 2010, available at <https://www.law360.com/articles/181155/carrefour-marinopoulos-fined-12-5m-for-price-setting>. See also Lia Vitzilaiou, *The Hellenic Competition Commission Fines a Retailer for Resale Price Maintenance and Other Infringements within Its Franchise Network (Carrefour Marinopoulos)*, e-COMPETITIONS, Feb. 2011, available at https://www.lambadarioslaw.gr/publications/2011/en/article_33885.pdf.

¹⁶¹ Daniel Mandrescu, *The Return of the MFN Clauses – Platform Ranking as an Enforcement Mechanism for Price Parity*, CORE BLOG, June 26, 2019, available at <https://coreblog.lexxion.eu/the-return-of-the-mfn-clauses-platform-ranking-as-an-enforcement-mechanism-for-price-parity/>.

¹⁶² See, e.g., *United States v. Apple, Inc.*, 791 F.3d 290 (2d Cir. 2015).

online.¹⁶³ Amazon ended the “Price Parity” policy for its platform in Europe in 2013 after regulatory agencies in the U.K. and Germany investigated Amazon over the same policy.¹⁶⁴

Investigations and enforcement actions involving explicit collusions enforced by algorithms are rare, either because parties are less likely to enter agreements that are per-se illegal or because the required evidence to prove the conspiracy is high. The next discussed theory of collusion, hub and spoke, is much more present in current investigations and decisions.

2. *Hub-and-spoke collusion*

The “hub-and spoke conspiracy” is one “in which an entity at one level of the market structure, the ‘hub,’ coordinates an agreement among competitors at a different level, the ‘spokes.’”¹⁶⁵ “These arrangements consist of both vertical agreements between the hub and each spoke and a horizontal agreement among the spokes ‘to adhere to the [hub’s] terms,’ often because the spokes ‘would not have gone along with [the vertical agreements] except on the understanding that the other [spokes] were agreeing to the same thing.’”¹⁶⁶ In hub-and-spoke conspiracies involving pricing algorithms, the “hub” serves as the party sending the pricing signal, and the “spokes” are the parties that receive the signal. Upon receiving these signals, the spokes can set their prices, and coordinate directly through a hub.

Antitrust regulators have been active in bringing enforcement actions involving hub-and-spoke conspiracies and pricing algorithms. There are issues, however, that have challenged

¹⁶³ See David McCabe, *Amazon to End Price Practice Critics Said Could Violate Antitrust Law*, Axios, Mar. 11, 2019, available at <https://wwwaxios.com/amazon-price-practice-antitrust-elizabeth-warren-d802ba71-d376-4316-b9dc-cca4540959ac.html>.

¹⁶⁴ See *Amazon to Alter Pricing Policy for Traders*, BBC News, Aug. 29, 2013, available at <https://www.bbc.com/news/business-23881202>.

¹⁶⁵ United States v. Apple Inc., 791 F.3d 290, 314 (2d Cir. 2015).

¹⁶⁶ *Id.* (citing PHILLIP E. AREEDA & HERBERT HOVENKAMP, ANTITRUST LAW ¶ 1402c (3d ed. 2010)).

regulators seeking to identify such conspiracies in the first instance. The technology relied upon to implement such conspiracies obviates the need for frequent communications between co-conspirators, thereby making it more difficult for regulators to obtain communications that evidence the illegal agreement. On the other hand, the internet has increased pricing transparency, making it easier for the hub to detect and penalize non-compliant members of the conspiracy. Evidence of retaliation—“penalty evidence”—has proven to be of significant evidentiary value in successful investigations and enforcement actions.

The first enforcement action involving a hub-and-spoke theory of algorithmic price coordination began in 1992, when the DOJ filed a complaint against eight airlines and the Airline Tariff Publishing Company (ATPCO). Among other things, the DOJ’s complaint alleged that the airlines used the ATPCO, a jointly-owned company, to facilitate the hub-and-spoke conspiracy. Specifically, the airlines used the ATPCO’s online fare dissemination service to communicate with one another, thereby facilitating their horizontal agreement to increase price, eliminate discounts, and set fare restrictions. The DOJ resolved the charges by consent decree, and the U.S. District Court for the District of Columbia approved the settlement in December 1993.¹⁶⁷

Outside the United States, regulators have been active in putting an end to similar forms of coordination. For example, in 2016, Russia’s competition agency began an investigation surrounding allegations of price fixing among retail sellers of Apple smartphones.¹⁶⁸ The investigation concluded that “since the start of official sales of the Apple iPhone 5s, iPhone 5c, iPhone 6, iPhone 6 Plus, iPhone 6s and iPhone 6s Plus in Russia, most resellers fixed and

¹⁶⁷ United States v. Airline Tariff Publ’g Co., Case Civ.A.No. 02-2854, 1993 WL 527923, at *1 (D.D.C. Nov. 1, 1993); *see also* United States v. Airline Tariff Publ’g Co., 836 F. Supp. 9 (D.D.C. 1993).

¹⁶⁸ See OECD, ANNUAL REPORT ON COMPETITION POLICY DEVELOPMENTS IN THE RUSSIAN FEDERATION 18–19 (2018), available at [https://one.oecd.org/document/DAF/COMP/AR\(2018\)26/en/pdf](https://one.oecd.org/document/DAF/COMP/AR(2018)26/en/pdf).

maintained the same prices for these products during nearly three months.” The investigation also found that the retailers’ prices “coincided with prices from press releases and price lists published and distributed by LLC ‘Apple Rus’ employees from e-mail addresses in the apple.com domain.” The investigation concluded in 2017, after which iPhone prices “significantly decreased” and LLC Apple Rus was forced to pay a fine.

The hub-and-spoke conspiracy was enforced by LLC Apple Rus aggressively. After issuing price lists to the retail “spokes” of the conspiracy, LLC Apple Rus utilized price monitoring software to detect and penalize non-compliance. Participating retailers, too, used price-monitoring software to collect competitor-pricing data. Retailers would then use this data to inform LLC Apple Rus about pricing deviations, expecting that the company would take action against defecting retailers.¹⁶⁹

As these cases illustrate, sellers may find themselves liable for their involvement in hub-and-spoke conspiracies when they use third parties to make algorithmically-driven pricing decisions. One case that has not been addressed definitively by courts is whether hub-and-spoke liability might attach to popular ride-sharing companies like Uber and Lyft, which provide car owners with an application platform that they can use to connect with individuals seeking rides. For their service, Uber drivers charge the ride-hailing individuals a fare that is determined by Uber’s pricing algorithm. Uber drivers are not allowed to negotiate individually with riders.

In private litigation in the United States, a federal district court found that a plaintiff had “plausibly alleged a [hub-and-spoke] conspiracy in which drivers sign up for Uber precisely on

¹⁶⁹ See OECD, DIRECTORATE FOR FINANCIAL AND ENTERPRISE AFFAIRS COMPETITION COMMITTEE, ROUNDTABLE ON HUB-AND-SPOKE ARRANGEMENTS (2019), available at [https://one.oecd.org/document/DAF/COMP\(2019\)14/en/pdf](https://one.oecd.org/document/DAF/COMP(2019)14/en/pdf).

the understanding that the other [drivers] were agreeing to the same pricing algorithm, and in which drivers' agreements with Uber would be against their own interests were they acting independently.”¹⁷⁰ While no competition agency has yet addressed whether this arrangement gives rise to hub-and-spoke liability, the Court of Justice of the European Union (CJEU) has expressed concern that Uber’s business model “might give rise to hub-and-spoke conspiracy concerns when the power of the platform increases[.]”¹⁷¹ Whether Uber’s ride-sharing platform becomes so dominant may determine whether competition authorities challenge Uber’s pricing practices under a hub-and-spoke theory of liability.

3. *Tacit collusion*

There are two types of algorithmic tacit collusion. The first is where firms in the market unilaterally develop algorithms targeted to profit maximize, and at some market setting these algorithms deploy pricing or supply policies that are supra-competitive without any agreement between competitors. These algorithms increase price transparency, reduce the reaction time to price changes, and eliminate human biases in price setting, potentially resulting in supra-competitive pricing.¹⁷² The second is machine-learning algorithms that learn to collude although they have not been specifically instructed to do so.¹⁷³

¹⁷⁰ Meyer v. Kalanick, 174 F. Supp. 3d 817, 822–27 (S.D.N.Y. 2016).

¹⁷¹ Opinion of Advocate General Szpunar delivered on 11 May 2017, Case C-434/15, Asociación Profesional Elite Taxi v. Uber Systems Spain SL, ECLI:EU:C:2017:364, at 13 n. 23.

¹⁷² Ariel Ezrachi & Maurice E. Stucke, *Artificial Intelligence & Collusion: When Computers Inhibit Competition*, U. ILL. L. REV. 1775, 1783 (2017); OECD, SUMMARY OF DISCUSSION OF THE ROUNDTABLE ON ALGORITHMS AND COLLUSION, DAF/COMP/M(2017)1/ANN2/FINAL (2017) at 5.

¹⁷³ Emilio Calvano et al., *Algorithmic Pricing What Implications for Competition Policy?*, 55 REV. INDUS. ORG. 155 (2019). See also Terrell McSweeney & Brian O’Dea, *The Implications of Algorithmic Pricing for Coordinated Effects Analysis and Price Discrimination Markets in Antitrust Enforcement*, ANTITRUST, Fall 2017, at 75, 7 (discussing a “possibility . . . that algorithms may facilitate tacit collusion between competitors” and citing a finding by Bruno Salcedo “that under certain conditions, tacit collusion between firms employing pricing algorithms is . . . inevitable.”).

Prevailing law in the United States does not deem tacit collusion unlawful. Conventional law and economics theory posits that such supra-competitive pricing resulting from tacit collusion is not problematic because it is likely to be unstable and shorter lived than if it were achieved through joint conduct.¹⁷⁴ However, others argue that such conduct can be more stable than formal human-based agreements and that companies must take responsibility for anticompetitive behavior deployed by their algorithms, even when they did not intend to collude.¹⁷⁵

There are few, if any, actions that have resulted in antitrust liability based on the two types of algorithmic collusion discussed above. However, in *Eturas*, the CJEU provided guidance as to the circumstances under which the unilateral adoption of a pricing algorithm may give rise to liability. The case involved travel agencies that adopted the same online-booking platform, Eturas, to facilitate travel bookings.¹⁷⁶ After adopting the platform, an Eturas administrator sent an email in 2009 to a limited number of the travel agencies, which included a voting option to limit the discount cap for certain services offered by the agencies.¹⁷⁷ Two days later, the Eturas administrator circulated another email informing its recipients that the discount cap had been approved.¹⁷⁸ Eturas then implemented the discount cap on its platform, and it applied the cap to all

¹⁷⁴ Reserve Supply Corp. v. Owens Corning Fiberglass Corp., 971 F.2d 37, 50 (7th Cir. 1992) (discussing why interdependent pricing is not unlawful: “This is not because such pricing is desirable (it is not), but because it is close to impossible to devise a judicially enforceable remedy for “‘interdependent’ pricing. How does one order a firm to set its prices *without regard* to the likely reactions of its competitors?”).

¹⁷⁵ The EC’s director has stated “I think we need to make it very clear that companies can’t escape responsibility for collusion by hiding behind a computer program.” See Kat Hall, Algorithms No Excuse for Cartel Behaviour, Says European Commish, THE REGISTER, Mar. 16, 2017, available at https://www.theregister.co.uk/2017/03/16/algorithms_no_excuse_for_cartel_behaviour_says_european_commi_sh/.

¹⁷⁶ Katri Havu & Neža Zupančič, *Case Comment: Collusion and Online Platforms in Eturas*, 11 COMPETITION L. REV. 255 (2016), available at http://clasf.org/download/competition-law-review/volume_11_-_issue_2/Vol11Issue2CaseCommentHavu.pdf

¹⁷⁷ *Id.* at 256.

¹⁷⁸ *Id.*

participating agencies. The discount cap, however, was not fixed, but if a travel agency sought to provide a customer with a discount in excess of the cap, it would have to take additional steps to do so.¹⁷⁹

The Lithuanian Competition Council imposed fines on Eturas and thirty travel agencies that used its platform.¹⁸⁰ The case was ultimately appealed to the CJEU, which was tasked with addressing, among other things, the factors that should be considered in determining whether the travel agencies engaged in illegal collusion.¹⁸¹ The CJEU focused on the travel agencies' knowledge of the administrator's messages about the discount caps.¹⁸² If they had knowledge, courts could presume that the travel agencies colluded among themselves and with Eturas, unless they took actions to distance themselves from the agreement.¹⁸³ The court held that the presumption could be rebutted in a number of ways.¹⁸⁴ For example, by voting against the discount cap, reporting the conduct to the authorities, or consistently offering discounts in excess of the cap.¹⁸⁵

Experimental evidence suggests that in certain market settings, such as a small number of sellers and frequent transactions ("repeated games"), it is theoretically possible that machine-learning algorithms will learn to collude, without communicating, and without being programmed to do so.¹⁸⁶ However, the Antitrust Division of the DOJ and the FTC expressed the view that "these

¹⁷⁹ *Id.*

¹⁸⁰ *Id.*

¹⁸¹ *Id.*

¹⁸² *Id.*

¹⁸³ *Id.*

¹⁸⁴ *Id.*

¹⁸⁵ *Id.*

¹⁸⁶ See Calvano et al., *supra* note 173.

scenarios seem[ed] too speculative.”¹⁸⁷ These concerns may be driven by doubts as to whether machine-learning algorithms can sustain collusion without additional support from humans.¹⁸⁸ Having said that, if such collusion arises, companies can be held responsible for the algorithms they deploy, and the anticompetitive outcome created by their algorithm.¹⁸⁹ However, machine programs, such as pricing algorithms, will only become an antitrust issue if they are used as instruments of collusion or conspiracy; independent adoption of such pricing algorithms by itself is likely beyond the reach of the antitrust laws.

Although doubts remain, the theoretical possibility of collusion should not be dismissed. In a February 2020 report issued by the Antitrust Section of the American Bar Association, the Section noted that the “effects of pricing algorithms on consciously parallel pricing” may warrant more attention in light of advances in technology, and recommended that regulators “continue to evaluate such effects closely in order to determine when they may require further scrutiny under existing competition laws.”¹⁹⁰

¹⁸⁷ OECD, DIRECTORATE FOR FINANCIAL AND ENTERPRISE AFFAIRS COMPETITION COMMITTEE: ALGORITHMS AND COLLUSION, NOTE BY THE UNITED STATES (2017), available at <https://www.ftc.gov/system/files/attachments/us-submissions-oecd-2010-present-other-international-competition-fora/algorithms.pdf>.

¹⁸⁸ Ulrich Schwalbe, *Algorithms, Machine Learning, and Collusion*, 14 J. COMPETITION L. ECON. 568, 600 (2019).

¹⁸⁹ See Kat Hall, Algorithms No Excuse for Cartel Behaviour, Says European Commish, THE REGISTER, Mar. 16, 2017, available at https://www.theregister.co.uk/2017/03/16/algorithms_no_excuse_for_cartel_behaviour_says_european_commissioner/.

¹⁹⁰ REPORT OF THE INTERNATIONAL DEVELOPMENTS AND COMMENTS TASK FORCE ON POSITIONS EXPRESSED BY THE ABA ANTITRUST LAW SECTION BETWEEN 2017 AND 2019, COMMON ISSUES RELATING TO THE DIGITAL ECONOMY AND COMPETITION, Feb. 27, 2020, available at https://ourcuriousamalgam.com/wp-content/uploads/SAL-Report-on-Common-Issues-Relating-to-the-Digital-Economy-and-Competition_Final_4.16.2020.pdf.

D. International reports and proposals

Numerous governments, competition authorities, special commissions, and international organizations have examined competition and antitrust issues arising from big data and artificial intelligence in recent years. Following a joint study of France's Autorité de la concurrence and Germany's Bundeskartellamt in 2016¹⁹¹ and of the OECD also in 2016,¹⁹² as well as a study by Japan's Fair Trade Commission in 2017,¹⁹³ government competition authorities and commissions issued a number of studies in 2018 and 2019:

- the EC's report on "Competition policy for the digital era" (also known as the Crémér Report);¹⁹⁴
- the U.K. Competition and Markets Authority (CMA)'s Digital Expert Panel report on "Unlocking digital competition" (commonly known as the Furman Report);¹⁹⁵

¹⁹¹ Autorité de la concurrence and Bundeskartellamt (2016), Competition Law and Data, *available at* <http://www.autoritedelaconcourse.fr/doc/reportcompetitionlawanddatafinal.pdf>; (2019) Algorithms and Competition, *available at* <https://www.autoritedelaconcourse.fr/sites/default/files/algorithms-and-competition.pdf>.

¹⁹² OECD, BRINGING COMPETITION TO THE DIGITAL ERA (2016), *available at* [https://one.oecd.org/document/DAF/COMP\(2016\)14/en/pdf](https://one.oecd.org/document/DAF/COMP(2016)14/en/pdf). See also in 2019, Laurence Boone, OECD Chief Economist, Chiara Criscuolo, OECD Science and Technology Directorate, and James Mancini, OECD Directorate for Financial and Enterprise Affairs, *Competition in the Digital Age*, OECD ECOSCOPE, May 31, 2019, *available at* <https://oecddecoscope.blog/2019/05/31/competition-in-the-digital-age>.

¹⁹³ JAPAN FAIR TRADE COMM'N, COMPETITION POLICY RESEARCH CENTER, REPORT OF STUDY GROUP ON DATA AND COMPETITION POLICY (2017), *available at* https://www.jftc.go.jp/en/pressreleases/yearly-2017/June/170606_files/170606-4.pdf.

¹⁹⁴ JACQUES CRÉMER, YVES-ALEXANDRE DE MONTJOYE & HEIKE SCHWEITZER, COMPETITION POLICY FOR THE DIGITAL ERA (European Comm'n, 2019), *available at* <https://ec.europa.eu/competition/publications/reports/kd0419345enn.pdf> [hereinafter CRÉMER REPORT].

¹⁹⁵ UNLOCKING DIGITAL COMPETITION: REPORT OF THE DIGITAL COMPETITION EXPERT PANEL (2019), *available at* <https://www.gov.uk/government/publications/unlocking-digital-competition-report-of-the-digital-competition-expert-panel> [hereinafter FURMAN REPORT].

- the Australian Competition & Consumer Commission (ACCC)’s “Digital Platforms Report”¹⁹⁶ (which complements a 2017 Australian Productivity Commission report on “Data Availability and Use”);¹⁹⁷
- the German Commission’s “Competition Law 4.0” report;¹⁹⁸
- the Competition Bureau of Canada’s report on “Big data and innovation” (reinforced by the 2019 Competition Policy Council Communiqué);¹⁹⁹ and
- the G7 competition authorities’ “Common Understanding” on “Competition and the Digital Economy.”²⁰⁰

In addition, in the United States, the FTC has conducted hearings (including international hearings) to examine the competition, consumer protection, and data privacy implications of new technologies and business practices, including those associated with digital platforms.²⁰¹ The Stigler Center of the University of Chicago also issued a “Study of Digital Platforms.”²⁰² These

¹⁹⁶ AUSTRALIAN COMPETITION & CONSUMER COMM’N, DIGITAL PLATFORMS INQUIRY: FINAL REPORT (2019), available at <https://www.accc.gov.au/publications/digital-platforms-inquiry-final-report>.

¹⁹⁷ AUSTRALIAN GOV’T PRODUCTIVITY COMM’N, DATA AVAILABILITY AND USE, INQUIRY REPORT (2017), available at <https://www.pc.gov.au/inquiries/completed/data-access/report>.

¹⁹⁸ FED. MINISTRY OF ECON. AFF. & ENERGY, A NEW COMPETITION FRAMEWORK FOR THE DIGITAL ECONOMY, REPORT BY THE COMMISSION ‘COMPETITION LAW 4.0’ (2019), available at https://www.bmwi.de/Redaktion/EN/Publikationen/Wirtschaft/a-new-competition-framework-for-the-digital-economy.pdf?__blob=publicationFile&v=3.

¹⁹⁹ COMPETITION BUREAU CANADA, BIG DATA AND INNOVATION: KEY THEMES FOR COMPETITION POLICY IN CANADA (2018), available at [https://www.competitionbureau.gc.ca/eic/site/cb-bc.nsf/vwapj/CB-Report-BigData-Eng.pdf/\\$file/CB-Report-BigData-Eng.pdf](https://www.competitionbureau.gc.ca/eic/site/cb-bc.nsf/vwapj/CB-Report-BigData-Eng.pdf/$file/CB-Report-BigData-Eng.pdf); Communiqué, Competition Policy Council, Canadian Competition Policy in the Digital Age: Is Today’s Toolkit up to the Task? Seventeenth Report of the C.D. Howe Institute Competition Policy Council, May 16, 2019, available at https://www.cdhowe.org/sites/default/files/attachments/other-research/pdf/Communique_2019_0516_CPC.pdf.

²⁰⁰ COMMON UNDERSTANDING OF G7 COMPETITION AUTHORITIES ON “COMPETITION AND THE DIGITAL ECONOMY” (2019), available at https://www.bundeskartellamt.de/SharedDocs/Publikation/EN/Others/G7_Erklaerung.pdf?__blob=publicationFile&v=6.

²⁰¹ Fed. Trade Comm’n, Hearings on Competition and Consumer Protection in the 21st Century, available at <https://www.ftc.gov/policy/hearings-competition-consumer-protection>.

²⁰² STIGLER CENTER REPORT, *supra* note 40.

studies broadly opine on the dynamics of competition in digital markets, including multi-sided platforms and zero pricing, as described above.

Several of these reports have explored whether competition law has been under-enforced. The Furman and Crémér Reports assert that the risk of under-enforcement (wrongly permitting anticompetitive behavior) has not been given sufficient weight against the risk of over-enforcement (wrongly prohibiting procompetitive behavior, which could stifle innovation and efficiencies). The concern is that firms that successfully compete for the market enjoy market power that is more durable and less contestable than has been the case in other markets in the past.

Other reports such as the Competition Bureau of Canada Report and the Canadian Competition Council Communiqué suggest that Canada’s competition law continues to provide an appropriate framework for potential anticompetitive behavior in the digital economy. The Competition Canada Report identified the need to adapt its tools and methods to this evolving area, while its antitrust investigations and analysis will continue to use its traditional framework for market definition, market power, and competitive effects.

Common themes that have emerged in some reports include greater responsibilities (whether under ex-ante regulation or ex-post application of competition law) for firms that are dominant or have a particularly strategic role, increasing scrutiny over mergers in the digital sector, and changing presumptions in both merger and dominance cases. Some approaches—particularly where regulation is proposed—introduce institutional reform proposals to house regulatory powers in newly established agencies. Improving international cooperation has also been recognized as important.

There is significant consensus on the view that data-driven innovation is more crucial than ever. Also, competition may sometimes depend on some form of access to data. In addition to

competition interventions, concern about barriers to entry arising from a dominant firm's control over data has led to proposals of data portability, interoperability, and open data.²⁰³ However, the various studies have differed in their view of how to approach such issues, not only in terms of these specific remedies, but also what body of law—competition law or ex-ante regulation—should give rise to such remedies.

The studies mentioned above range in their level of detail. Those with the most developed thinking and proposals for reform include the Crémier Report, the U.K. Furman Report, and the ACCC Digital Platforms Report, and so these receive the greatest attention. In early 2020, following the German Competition 4.0 report, Germany published its first legislative proposal in the “Digitalization Act” (the “German Draft Bill”), which addresses data access and portability, cross-market leveraging, and intermediation power. Other European countries have expressed support and are likely to follow suit.²⁰⁴ Given Germany’s leadership position in toughening the stance towards platforms (demonstrated, for example, by the Bundeskartellamt’s Facebook Decision²⁰⁵), the German Draft Bill is also discussed below.

²⁰³ Data portability would allow consumers to move their data from one service provider to another, with the intention of reducing network externalities that confer market power. Interoperability requirements would involve use of data standards across firms and their systems. Open data would allow rivals access to data held by incumbent firms. These issues are being tackled by both data privacy and competition practitioners. See OECD, ENHANCING ACCESS TO AND SHARING OF DATA: RECONCILING RISKS AND BENEFITS FOR DATA RE-USE ACROSS SOCIETIES (2019).

²⁰⁴ France, Germany, Italy, and Poland wrote a Joint Letter of P. Altmaier, S. Patuaneli, B. Le Maire and J. Emilewicz, February 4, 2020, available at <https://g8fip1kplyr33r3krz5b97d1-wpengine.netdna-ssl.com/wp-content/uploads/2020/02/Letter-to-Vestager.pdf>.

²⁰⁵ Press Release, Bundeskartellamt, Bundeskartellamt Prohibits Facebook from Combining User Data from Different Sources, Feb. 7, 2019, available at https://www.bundeskartellamt.de/SharedDocs/Meldung/EN/Pressemitteilungen/2019/07_02_2019_Facebook.html. This decision has been suspended by the Higher Regional Court (Oberlandesgericht) of Düsseldorf. See Giuseppe Colangelo, *Facebook and the Bundeskartellamt’s Winter of Discontent*, COMPETITION POL’Y INT’L, Sept. 23, 2019, available at <https://www.competitionpolicyinternational.com/facebook-andbundeskartellamts-winter-of-discontent>.

The sections that follow outline some of the key areas discussed in these reports, focusing first on the line between competition enforcement and regulation in the case of dominance, and then considering merger control. The discussion then turns to multi-firm conduct, particularly algorithms and competition law. It closes by discussing institutional proposals to develop new regulatory units or bodies, and procedural proposals to accelerate enforcement and streamline review of agency decisions.

1. *Proposed frameworks for monopolization / abuse of dominance and suggested ex-ante regulation*

A common concern in the reports was that a firm's collection and use of data, as well as network effects from platform economies, can result in that firm having significant and entrenched market power. In the case of a dominant platform, it may also effectively act as a regulator of the markets that operate on its platform while also competing in such downstream markets, giving the dominant platform operator power over participants in such markets.

As might be expected, views on how to address abuse of dominance claims differed in emphasis on relying on the existing competition framework with some significant adjustments, or whether instead there should be greater emphasis on ex-ante regulation. The two broad areas of focus were, first, the presumption against anticompetitive conduct of dominant firms in competition law, and second, whether (and if so what kind of) ex-ante regulation might be necessary to address dominance problems.

2. *Expanding abuse of dominance in the EU and Germany*

The Crémér Report suggested applying a duty on dominant platforms to ensure that their rules do not impede free, undistorted, and vigorous competition (such as impeding customers from switching to competing platforms, or multi-homing) without an objective efficiency justification.

It focused on what can be achieved using existing legal provisions and powers while recognizing that it may be necessary to introduce complementary regulation. It sought a more vigorous approach to vertical theories of harm in order to assess how firms leverage their market power and self-preferencing in downstream product markets operating over their platforms. The Crémér Report also suggested that competition analysis focus less on market definition in digital platforms, and more on the impact of conduct on markets.

Focusing on competition law rather than ex-ante regulation, the Crémér Report explored whether a fresh notion of “indispensable data” under a revised approach to the doctrine of “essential facility” under the competition law of dominance might be useful.²⁰⁶ It concluded that refusal to meet standardized requests for data might be viewed as abuse of dominance under Article 102 TFEU²⁰⁷ if the refusal of access is a way for the data gatekeeper to shield itself from competition.

The Crémér Report recognized that, for ongoing data access, it would likely be necessary to have sector-specific regulation. It proposed that data portability requirements should be applied to dominant firms where there are substantial consumer lock-in effects in order to strengthen competition in secondary markets. However, these requirements could to some extent be applied under the GDPR, the recently introduced EU data protection framework.²⁰⁸

These findings echoed aspects of the Australian Productivity Commission, which found that introducing open data would be so specific to the type of data, its use, and the APIs and

²⁰⁶ CRÉMER REPORT, *supra* note 194 at 98.

²⁰⁷ The Treaty on the Functioning of the European Union (TFEU) lays the foundation of EU competition law (Articles 101 and 102 TFEU).

²⁰⁸ CRÉMER REPORT, *supra* note 194 at 8.

standards involved, that it could only be done on a sector-by-sector basis.²⁰⁹ The ACCC is responsible for leading the introduction of a new “Consumer Data Right.” The government decided that it would start with open banking, then turn to open data in the telecommunications and energy sectors.²¹⁰ In 2018, the U.K.’s CMA introduced open banking, an initiative to enforce standardized interfaces that enable third parties to access a consumer’s bank data given their permission.²¹¹

The Crémér Report also proposed to reverse the burden of proof for anticompetitive conduct by dominant platforms, making it their responsibility to justify certain conduct with compensating efficiencies. To address network effect concerns, the Crémér Report suggested that dominant platforms should have to provide justification if they do not make their platform interoperable with their competitors. It also considered whether remedies for abuse of dominance might include a restorative element.

The German Draft Bill reflects several of the Crémér Report’s elements. It builds on 2017 amendments to the competition law which established that zero-pricing of services should not preclude definition of a relevant market for these services, and identified network effects, single- and multi-homing, and access to data and innovation as factors relevant in determining dominance in multi-sided platform markets.²¹² The German Draft Bill provides that when considering market

²⁰⁹ AUSTRALIAN GOV’T PRODUCTIVITY COMM’N, DATA AVAILABILITY AND USE, PRODUCTIVITY COMMISSION INQUIRY REPORT No. 82 (2017), *available at* <https://www.pc.gov.au/inquiries/completed/data-access/report/data-access.pdf>.

²¹⁰ GOV’T OF AUSTRALIA, DEP’T OF TREASURY, CONSUMER DATA RIGHT OVERVIEW (2019), https://treasury.gov.au/sites/default/files/2019-09/190904_cdr_booklet.pdf.

²¹¹ COMPETITION & MARKETS AUTHORITY, THE RETAIL BANKING MARKET INVESTIGATION ORDER 2017, *available at* <https://assets.publishing.service.gov.uk/media/5893063bed915d06e1000000/retail-banking-market-investigation-order-2017.pdf>.

²¹² German Competition Act § 18, ¶ 2a and ¶ 3a.

power of an intermediary in multi-sided markets, particular attention should be given to the importance of its intermediation services for accessing supply and sales markets.²¹³

The German Draft Bill would introduce obligations for “undertakings with paramount importance for competition across markets.”²¹⁴ Only a very small number of firms would likely have this status, which would be determined based on:

- dominance in one or more markets;
- financial strength or access to other resources;
- vertical integration and activities on otherwise related markets;
- access to data relevant for competition; and
- the importance of its activities for third parties’ access to supply and sales markets.

The German Draft Bill introduces five types of behaviors that the Bundeskartellamt (Federal Cartel Office) can prohibit if it finds a company satisfies this status:

- self-favoring;²¹⁵
- impeding competitors by leveraging market power (even where the provider is not dominant if the impediment is likely to significantly impair the competitive process);²¹⁶
- using data collected in a market in which it is dominant to create or increase barriers to entry in other markets;
- hindering interoperability and data portability if this restrains competition; and
- providing insufficient information to other firms to evaluate its services.

²¹³ German Draft Bill § 18, ¶ 3a.

²¹⁴ German Draft Bill § 19a.

²¹⁵ Self-favoring refers to treating the competitors’ offers less favorably than its own offers when providing access to supply and sales markets.

²¹⁶ The German Draft Bill § 20, ¶ 3a, provides that an anticompetitive impediment of competitors exists if a firm with superior market power on a multi-sided market impedes competitors from attaining positive network effects and thereby creates a serious risk of considerable restriction of competition on the merits.

The prohibition is subject to an efficiency justification. Analogous to the recommendations in the Furman Report, the burden of proof for such justifications would lie on the companies.

3. *Inclination towards ex-ante regulation in the U.K. Furman Report and Stigler Center Report*

The Furman Report was similarly inclined towards proactive intervention by introducing ex-ante regulation, especially for firms with “strategic market status” or SMS, under a new agency—a Digital Markets Unit—focused on digital markets (see below). A subsequent U.K. CMA report²¹⁷ offered three criteria for SMS in the context of digital advertising:

- the presence of enduring market power over a relevant market;
- where the platform is a gatekeeper to a significant portion of consumers; and
- where businesses depend on the platform to reach the other side of the market (i.e., the platform is not merely a gateway but a bottleneck gateway).

The Furman Report’s expansive view of regulation could suggest that the Digital Markets Unit would have objectives relating to data mobility and data openness that would apply across the whole digital sector and not only SMS firms. The proposed new U.K. regulator would focus on level playing-field concern arising from “platform as regulator” issues. Other ex-ante initiatives would include requirements for dominant firms to employ open standards that would permit data portability and interoperability, aimed at reducing the entrenching effects of network externalities.

With this ex-ante approach, the Furman Report did not propose to reverse the presumption against anticompetitive conduct in the manner of the Crémér Report, preferring to keep the current

²¹⁷ COMPETITION & MARKETS AUTHORITY, ONLINE PLATFORMS AND DIGITAL ADVERTISING, MARKET STUDY INTERIM REPORT 236 (2019), available at https://assets.publishing.service.gov.uk/media/5dfa0580ed915d0933009761/Interim_report.pdf.

competition law approach. It would instead rely more on regulation than competition law as the mechanism to address the dominance concerns, as well as broader sector issues.

Some have taken the view that both adjustments to the competition framework and ex-ante regulation are required. For example, the Stigler Center Report proposed reversing or at least relaxing the burden of proof for anticompetitive conduct by platforms with “bottleneck power.” These are conceived similarly to the Furman Report’s SMS and some scenarios of the German “companies with paramount importance for competition,” that is, where the platform has market power and acts as a gatekeeper that controls access to one or more sides of a multi-sided market. The Stigler Center Report envisaged greater focus on such bottleneck platforms, including in relation to refusal to deal, predatory pricing, loyalty rebates, and exclusive dealing.²¹⁸ It also proposed more proactive intervention through ex-ante regulation for bottleneck firms by a new “Digital Authority.” The Stigler Center envisioned the Digital Authority having regulatory powers over all digital firms over data mobility and open standards, and then mandating data sharing only for firms with bottleneck power.

4. *The potential and limits of competition law*

Although there is some disagreement as to how data privacy intersects with competition law, there has been significant consensus around the need to avoid using competition law to solve all problems in digital markets, such as privacy, and the reports, as described above, have calls for regulation and consumer protection. In addition, in jurisdictions where the abuse of dominance offence includes the imposition of exploitative business terms, enforcers may recognize that competition includes privacy terms, alongside the charging of excessive prices. For example, the

²¹⁸ STIGLER CENTER REPORT, *supra* note 40 at 74.

German Bundeskartellamt found in February 2019 that Facebook’s aggregation of personal data from Facebook and Facebook-owned sites (such as Instagram) and from third-party websites with the “Like” or “Share” buttons amounted to an abuse of market power. Instead of viewing this as the domain of the newly introduced GDPR, the Bundeskartellamt found that the collection of such personal data without adequate consent amounted to exploitative business terms and an abuse of market power. The Bundeskartellamt’s decision has caused much controversy both by commentators and from German courts.

5. *Issues and proposed frameworks for mergers and acquisitions*

The reports note common concerns about mergers in digital markets related to the risk that an incumbent firm acquires new or potential future rivals. The pricing models of multi-sided markets, particularly “free” services, and ramp up to monetizing products that first become highly successful before generating much revenues, means that many mergers that might raise significant competition issues do not exceed merger notification thresholds that are set according to revenue. Some governments and academics have proposed substantive changes to merger laws with respect to digital markets, and many commentators oppose such efforts to change the standards. *See* Section III.b, *supra*.

The Crémer Report did not propose to change the revenue-based thresholds that trigger a notification of a merger to the EC at this time, but to keep them under review. Nor did it propose to change the substantive “significant impediment to effective competition” test for mergers. However, it did propose a “heightened degree of control” where an acquisition is plausibly part of a defensive entrenchment strategy. This would include considering the potential future horizontal

impact of acquisitions by a dominant platform that may enhance its attractiveness as an ecosystem.²¹⁹

The Crémér Report did not suggest increasing merger review focus on “potential competition,” and was more concerned about the possibility of a merger strengthening dominance in the ecosystem.²²⁰ Similar to its approach to dominance, it suggested shifting the burden of proof to merging parties.

The U.K. Furman Report suggested moving to a “balance of harms” test (about which the U.K.’s CMA subsequently expressed reservations), and toning down the presumption that non-horizontal mergers tend to be benign. It encouraged prioritizing the review of digital mergers, and putting greater weight on “potential competition.” It also proposed introducing a merger notification requirement for firms having “strategic market status” in order to make the CMA aware of all mergers, but not introducing a pre-clearance requirement. It did not, however, propose changing U.K. rules for applying jurisdiction to digital mergers, but to keep under review. It found that the reason why several high-value non-horizontal digital mergers had not been reviewed was not due to gaps in merger notification thresholds: the CMA could have required notification on the basis of a share of supply test. The report did suggest, however, that the CMA must make digital mergers a higher priority.²²¹

²¹⁹ CRÉMER REPORT, *supra* note 194 at 11.

²²⁰ CRÉMER REPORT, *supra* note 194 at 112.

²²¹ FURMAN REPORT, *supra* note 195 at 94.

Several of these proposals were echoed in the Stigler Center Report,²²² although it went further to suggest that platform businesses with bottleneck power should have to notify every acquisition and, thus, would have to wait for pre-clearance independently of their size.

The Australian Digital Platforms Report proposed a merger notification protocol for certain transactions (including using a transaction value threshold) of “large platform firms,” and to consider innovation, potential competition, and assets (data in particular) as factors in merger assessments.

6. *Issues and proposed frameworks for multi-firm conduct*

While most of the antitrust concerns around digital markets focus on unilateral conduct and the area of merger control, the reports mentioned above have also expressed—somewhat unrelated—concerns with respect to multilateral conduct. These relate to the implications of (voluntary) data sharing and pooling among competitors and the competitive effects of the use of algorithms for pricing and other business decisions.

7. *Issues in data sharing*

Acknowledging the potential efficiencies of data exchange among competitors, the Crémer Report also expresses the concern that data sharing or pooling may limit competition:²²³

- Data sharing and pooling constitutes an information exchange, which can favor collusion. As a remedy, the exchanged or pooled data can be limited in scope, provided at a higher level of aggregation, or be anonymized.²²⁴

²²² It proposed to reverse the burden of proof for dominant digital platforms with bottleneck power, require mergers involving a digital business with bottleneck power to be reviewed by a digital authority, to consider impact of merger on potential competition, and to be more skeptical about non-horizontal mergers.

²²³ CRÉMER REPORT, *supra* note 194 at 94, 96.

²²⁴ *Id.*

- Data sharing and pooling may also align competitors' costs or product features, thereby limiting competition on price, quality, or innovation.²²⁵

The Crémér Report suggests that growing experience with assessing (the net effect of) data sharing and pooling arrangements may at some point allow competition enforcers to take a more general stance on the permissibility of such arrangements (e.g., through a block exemption by the EC).²²⁶

8. *Issues in algorithmic collusion*

A recent publication by the OECD and a joint paper by the French and German competition authorities focus on the concern that algorithms may foster explicit or tacit collusion.²²⁷ A key question underlying both publications is whether existing competition law and its interpretation are sufficient to capture potential anticompetitive threats from algorithms. These publications build on a relatively new but rapidly growing legal and economic literature on the topic. In line with that literature, the Franco-German paper distinguishes three scenarios in which algorithms may support supra-competitive pricing:

- In the first scenario, firms design and use algorithms to implement an explicit agreement to collude. This includes the automated setting of collusive price levels, the monitoring of other cartel members' price setting, the automatic punishment of deviations, the facilitation of communication, or the obfuscation of collusion.²²⁸ As the paper points out, "the involvement of an algorithm in such a scenario does not raise specific competition law issues" due to the existence of an explicit—and thus illegal—agreement.²²⁹ Focusing more narrowly on monitoring and retaliation algorithms, the

²²⁵ *Id.*

²²⁶ CRÉMER REPORT *supra* note 194 at 98.

²²⁷ OECD, ALGORITHMS AND COLLUSION: COMPETITION POLICY IN THE DIGITAL AGE (2017), <http://www.oecd.org/competition/algorithms-collusion-competition-policy-in-the-digital-age.htm> [hereinafter OECD PAPER]; AUTORITÉ DE LA CONCURRENCE AND BUNDESKARTELLAMT, ALGORITHMS AND COMPETITION (2019), <https://www.autoritedelaconcurrence.fr/sites/default/files/algorithms-and-competition.pdf> [hereinafter FRANCO-GERMAN PAPER].

²²⁸ *Id.* at 27-28.

²²⁹ *Id.* at 60.

OECD paper further concludes that “this behavior could be prevented using traditional antitrust tools.”²³⁰

- A second scenario involves “situations in which a third party provides the same algorithm or somehow coordinated algorithms to competitors.”²³¹ This third party may be a pricing consultant or developer that provides similar advice on or implementations of pricing algorithms to competitors.²³² As the paper points out, this scenario is often compared to a classic “hub-and-spoke cartel.” The paper warns that “even a straightforward use of the same pricing algorithm can lead to similar pricing decisions when the algorithm reacts in similar ways to external events, such as changes in input costs or demand.”²³³ The paper then discusses that antitrust liability may depend on the degree to which the competitors were aware of each other’s use of the same or similar algorithms.²³⁴
- The third scenario involves the parallel use of independent pricing algorithms with self-learning capabilities that may develop strategies to support tacit (through the formation of beliefs about competing algorithms’ reactions) or explicit (through some form of communication) collusion among each other without having explicitly been programmed to do so.²³⁵ Pointing to a growing economic literature on this topic that provides initial evidence supporting the feasibility of such learning in experimental settings, the paper nevertheless concedes that it remains an open question whether such learning can occur in real market settings.²³⁶ Even if so, the paper suggests that the unilateral adoption of such algorithms may have to be qualified as “intelligent adaptations to the market rather than coordination.”²³⁷ In addition to this potential legal loophole, the OECD paper adds that this form of collusion “becomes even harder to prevent using traditional antitrust tools” due to the black box nature of the algorithms.

Focusing on the legal situation in the EU and its member states, the Franco-German paper does not suggest changes to competition law and enforcement. Instead, it states that “[t]he existing tools seem, at this stage, flexible in their application to cases involving algorithmic behaviour.”²³⁸

²³⁰ OECD PAPER, *supra* note 228 at 27.

²³¹ *Id.* at 31.

²³² *Id.* at 31.

²³³ *Id.* at 31.

²³⁴ *Id.* at 60.

²³⁵ *Id.* at 42–43.

²³⁶ *Id.* at 60.

²³⁷ *Id.* at 60.

²³⁸ *Id.* at 60.

However, the paper leaves it open whether future developments, particularly in the area of self-learning algorithms, may require reconsidering the reach of competition law.²³⁹ The OECD paper similarly suggests that a legislative approach may be necessary to capture the problem of self-learning algorithms through a changed treatment of tacit collusion. Additionally, the paper proposes a role for ex-ante merger control in markets with algorithmic activities by suggesting to extend the analysis of coordinated effects to less concentrated markets and conglomerate mergers.²⁴⁰

9. *Institutions and procedures*

a. New digital institutions

As mentioned above, some reviews, such as the Crémer Report, preferred to rethink some elements of competition law than propose new regulation, which does not require establishing new powers or institutions. Others, such as the Furman Report, proposed to introduce new regulation, which provokes the question of where regulatory and enforcement powers would lie. These questions obviously depend on a given jurisdiction's existing institutional landscape, in particular the remits of existing competition, data protection, information and communication technology, and media authorities.

In the U.K.'s case, the Furman Report proposed a new body, the Digital Markets Unit, with appropriate powers to impose solutions and to monitor, investigate, and penalize non-compliance. These solutions could include a code of conduct for SMS firms, sector-based regulations on data mobility and open standards, and openness of data. The unit would not have a mandate over mergers. The Furman Report did not resolve the question of whether this could be achieved under

²³⁹ *Id.* at 77.

²⁴⁰ OECD PAPER, *supra* note 228 at 40.

existing agencies. The Furman Report suggested that the Digital Markets Unit could either be housed in the CMA, the communications regulator (Ofcom), or both.

The Australian report envisaged a new specialist digital branch within the ACCC applying the current competition framework.

The Stigler Center, in the United States, suggested a new Digital Authority with “clear and broad authority” to make regulations with bottleneck power, including in respect of data sharing. It also envisioned regulations for the tech sector more widely, such as relating to data mobility, open standards, interoperability, and data collection. It also saw the authority as having a role in mergers.

b. Accelerating enforcement and streamlining review

The high speed of change in digital markets risks enforcement intervention coming too late to prevent harm to competition. The U.K.’s Furman Report suggested enabling faster enforcement, such as reducing the thresholds for use of interim measures. The EC also subsequently indicated that it will more readily use interim measures.²⁴¹

Improving the quality and speed of judicial review of agency decisions was the focus of both the Furman Report and the Stigler Center Report. The latter suggested introducing a specialized competition court. In the U.K., which already has the Competition Appeal Tribunal (CAT), the Furman Report proposed reducing the scope of the CAT’s review of antitrust enforcement. Currently, the CAT can reconsider the full merits of the CMA’s decision on legal and economic matters and make any decision the CMA could have made. A more limited role was

²⁴¹ Press Release, European Comm’n, Antitrust: Commission Opens Investigation into Broadcom and Sends Statement of Objections Seeking to Impose Interim Measures in TV and Modem Chipsets Markets, June 26, 2019, available at https://ec.europa.eu/commission/presscorner/detail/en/IP_19_3410.

proposed to allow the CMA an “appropriate margin of appreciation to reach decisions on digital cases that are likely to be particularly complex and may require elements of expert judgement.”²⁴²

10. *Conclusion: the need for international coordination*

Although there are varying approaches, some governments and commentators have proposed complementing traditional ex-post application of competition law with specific ex-ante regulation of dominant platforms. For example, some have considered changing presumptions, including introducing presumptions that certain types of behavior of dominant platforms are anticompetitive, requiring the platform to bear the burden of proof to show otherwise. However, others have opposed efforts to recalibrate competition law for digital markets.

Further, stricter antitrust treatment of companies in the digital space bears the risk of a patchwork situation with respect to the “rules of the game” that these companies will face around the globe. Indeed, while the proposals share some common themes, they also exhibit substantial differences. For example, several proposals include the designation of special status (alongside special obligations) to companies of strategic importance in a market. However, the criteria for SMS proposed in the U.K. and the obligations that come with it differ from the broader concept of “paramount importance for competition” encoded in the German Draft Bill and the more comprehensive behavioral rules that the Bundeskartellamt would be able to impose on such companies. In addition, even if the legislative frameworks were identical, the regulatory character of some of the new rules would leave room for interpretation to the regulatory bodies, potentially causing different decisions. Therefore, even if not all of the proposals described above will be

²⁴² FURMAN REPORT, *supra* note 195 at 106.

implemented, there is a potential for considerable differences with respect to the leeway that digital companies will have across jurisdictions.

While international differences in competition laws are nothing new (think of the “Atlantic Divide” in antitrust with respect to the treatment of market power), they weigh particularly heavy in the digital space. This is, once more, because of the pronounced role of scale efficiencies and network effects in the digital economy. First, in addition to potentially leading to the entrenchment of digital platforms, these features have brought about real benefits for consumers. Scale efficiencies have allowed platforms developed in larger markets (e.g., in the United States) to enter smaller national markets that, in isolation, would not have supported the development of such platforms due to high fixed development costs. Network effects, on the other hand, have benefited consumers who now have the option to easily connect with friends abroad or buy from sellers in various countries. Second, as explained next, a patchwork of antitrust rules for these platforms has the potential to break these scale and network effects along legislative borders and thus reap consumers of their very benefits.

Adjusting one’s platform to a large collection of different antitrust rules across countries may be infeasible. For example, after the introduction of the GDPR, Europe’s privacy regulation framework, some companies made their services compatible with the GDPR worldwide instead of creating a customized solution for the EU.²⁴³ Similarly, Amazon changed its terms of business

²⁴³ For example, see the changes to Microsoft’s contract terms in reaction to the introduction of the GDPR, which were applied worldwide. See *Microsoft’s Commitment to GDPR, Privacy and Putting Customers in Control of Their Own Data*, Microsoft Blog Post, May 21, 2018, available at <https://blogs.microsoft.com/on-the-issues/2018/05/21/microsofts-commitment-to-gdpr-privacy-and-putting-customers-in-control-of-their-own-data>; Natasha Lomas, *Microsoft Announces Changes to Cloud Contract Terms Following EU Privacy Probe*, TECHCRUNCH, Nov. 18, 2019, available at <https://techcrunch.com/2019/11/18/microsoft-announces-changes-to-cloud-contract-terms-following-eu-privacy-probe>. See also Arielle Pardes, *What Is GDPR and Why Should You Care*, WIRED, May 24, 2018, available at <https://www.wired.com/story/how-gdpr-affects-you>.

world-wide when it faced the German Bundeskartellamt's concerns against some of its contract terms with sellers.²⁴⁴ In these two examples, companies decided against maintaining two parallel versions of their service. With many more countries regulating platform behavior in different ways, platforms may find it difficult to design and operate their service in a way that complies with each individual jurisdiction where they are active. In the best case, platforms may create isolated products for individual legislations. In the worst case, platforms will simply pull back and cease serving users in these markets. Either way, consumers in the corresponding jurisdictions will experience a decrease in the benefits from cross-border scale and network benefits.

International coordination can be beneficial. For example, the Furman Report recommends “crossborder co-operation between competition authorities and governments in sharing best practice and developing a common approach to issues across international digital markets.”²⁴⁵ Likewise, the G7 competition authorities recognized that “international cooperation between competition enforcers and policymakers is crucial.”²⁴⁶ As described above, coordination could align the treatment of companies in international digital markets.

²⁴⁴ Bundeskartellamt Press Release, Bundeskartellamt Obtains Far-Reaching Improvements in the Terms of Business for Sellers on Amazon’s Online Marketplaces, July 17, 2019, available at https://www.bundeskartellamt.de/SharedDocs/Meldung/EN/Pressemitteilungen/2019/17_07_2019_Amazon.html.

²⁴⁵ FURMAN REPORT, *supra* note 195 at 118.

²⁴⁶ COMMON UNDERSTANDING OF G7 COMPETITION AUTHORITIES ON “COMPETITION AND THE DIGITAL ECONOMY” 8 (2019), available at https://www.bundeskartellamt.de/SharedDocs/Publikation/EN/Others/G7_Erklaerung.pdf?__blob=publicationFile&v=6.