Big Data and the Non-Horizontal Merger Guidelines

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Data is increasingly valuable as a product, input, and market tool. Exclusive data may be the most valuable asset many firms possess. Yet, regulators in the United States often overlook the importance of data-related mergers, especially between firms that do not directly compete. This is in part because the Non-Horizontal Merger Guidelines ("NHMG") are out of date and obsolete. The NHMG were last updated in 1984 at a time when agencies relied on a simplistic presumption against non-horizontal merger enforcement.

Revision of the NHMG presents an opportunity to provide a modern framework to evaluate mergers. An update to agency guidance is important to address changes in the use of data that have the potential to alter market structures and raise barriers to entry. This Note finds that the NHMG should be updated to consider non-price harms, foreclosure, price discrimination, and entrenchment. Alternatively, agencies could publish specific guidance to aid in evaluating data-related mergers. Updated guidance would provide a helpful framework for courts analyzing data-related mergers and increase predictability for business stakeholders considering data-related mergers.

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INTRODUCTION

Data-related mergers with the potential to harm consumers' economic interests receive inadequate scrutiny by agencies in the United States.[1] This Note begins by predicting how regulators might react to a hypothetical merger between Facebook, Inc. ("Facebook") and Comcast Corporation ("Comcast") to

1. *See* Steven Davidoff Solomon, *Tech Giants Gobble Start-Ups in an Antitrust Blind Spot*, N.Y. TIMES (Aug. 16, 2016), https://www.nytimes.com/2016/08/17/business/dealbook/expect-little-antitrust-challenge-to-walmarts-bid-for-jet-com.html [https://perma.cc/X2VQ-ULQS]. Non-horizontal merger enforcement outside of the United States is beyond the scope of this Note. Some jurisdictions apply stricter enforcement policies than in the United States. For example, the European Commission ("EC") considered effects on consumer privacy in mergers such as Microsoft/Linkedin, Facebook/Whatsapp, and Google/DoubleClick. The EC allowed these mergers with minimal conditions and has yet to block a merger based on data-related concerns as of the writing of this Note.

demonstrate the inadequate agency guidance currently in place for evaluating data-related mergers.

Both Facebook and Comcast have large shares of consumer markets. In the United States, adults spend much more time on Facebook than any other social media service,[2] and Comcast provides 42 percent of broadband connections.[3] Both firms also have power over consumers. Facebook has control over an immense flow of personal data. Users are tied to the Facebook platform because it stores and shares their digital memories.[4] Comcast internet subscribers may be even more locked-in than Facebook users because, in the United States, many consumers have no alternatives for a fast, fixed broadband internet connection.[5]

Further, Facebook/Comcast might gain unique competitive advantages from its merged data because individual data elements become more valuable for artificial intelligence analysis when combined with other data.[6] For example, Facebook/Comcast would have access to the flow of data from Comcast's 26.25 million broadband subscribers and Facebook's 2.19 billion monthly active users.[7] It could use the insights from its combined data to develop new products and services, such as personalized security or entertainment content,[8] that no firm

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2. COMSCORE, INC., U.S. CROSS PLATFORM FUTURE IN FOCUS 32–33 (Mar. 22, 2017), https://www.comscore.com/Insights/Presentations-and-Whitepapers/2017/2017-US-Cross-Platform-Future-in-Focus [https://perma.cc/JA74-23L5] (diagramming audience engagement of leading social networks measured in average monthly minutes per visitor).

3. *Number of Broadband Internet Subscribers in the United States from 2011 to 2017, by Cable Provider*, STATISTA (2018), https://www.statista.com/statistics/217348/us-broadband-internet-susbcribers-by-cable-provider [https://perma.cc/SP3L-GNAW].

4. *See About How Often Do You Post Personal Photos or Videos on Facebook?*, STATISTA (2016), https://www.statista.com/statistics/562629/frequency-of-posting-personal-photos-or-videos-on-facebook-by-age-us [https://perma.cc/RQ4F-BEJZ] (finding that in the United States, 50 percent of users under 30 posted personal photos or videos on Facebook once or more per month).

5. *See* FED. COMMC'N COMM'N, INTERNET ACCESS SERVICES: STATUS AS OF JUNE 30, 2016, at 6 fig.4 (2017) (reporting that 37 percent of households have access to only one residential fixed broadband services with at least 25 Mbps downstream and at least 3 Mbps upstream speeds).

6. *See* Erik Brynjolfsson & Andrew McAfee, *The Business of Artificial Intelligence*, HARV. BUS. REV.: THE BIG IDEA (July 18, 2017), https://hbr.org/cover-story/2017/07/the-business-of-artificial-intelligence (stating that "[t]he performance of most machine learning systems improves as they're given more data to work with").

7. *See* Facebook, *Number of Monthly Active Facebook Users Worldwide as of 4th Quarter 2017*, STATISTA, https://www.statista.com/statistics/264810/number-of-monthly-active-facebook-users-worldwide [https://perma.cc/5Y2L-5HBD]; Lichtman Res. Group, *Number of Broadband Internet Subscribers in the United States from 2011 to 2017, by Cable Provider*, STATISTA, https://www.statista.com/statistics/217348/us-broadband-internet-susbcribers-by-cable-provider [https://perma.cc/SP3L-GNAW]. Both Facebook and Comcast collect extensive data from their users. *See* Gerard Lewis, *Our Commitment to Consumer Privacy*, COMCAST (Mar. 31, 2017), https://corporate.comcast.com/comcast-voices/our-commitment-to-consumer-privacy [https://perma.cc/HU8B-RC4Q].

8. *See, e.g.*, Peter Dockrill, *Facebook Just Pushed Its Facial Recognition Into a Creepy New Future*, SCIENCE ALERT (Dec. 20 2017), https://sciencealert.com/facebook-just-pushed-its-facial-recognition-into-a-bold-new-future-tagged-privacy [https://perma.cc/37HP-8MDX]; Mike Isaac, *Instagram May Change Your Feed, Personalizing It With an Algorithm*, N.Y. TIMES (Mar. 16, 2016), https://www.nytimes.com/2016/03/16/technology/instagram-feed.html?mtrref=www.google.com [https://perma.cc/8W8B-ATH9]; *Interview with Facebook Chief Technology Officer Mike Schroepfer*,

could compete with without access to an equivalent dataset. It could foreclose Comcast users from access to Facebook's competitors, such as Twitter or Snapchat. Alternatively, Facebook could provide some social media services exclusively to Comcast internet subscribers.

Additionally, market power from the merger could directly harm consumers. Facebook/Comcast's heightened market power might increase the price of broadband internet access, increase advertising to users, lower consumer privacy protections, or discriminate against consumers. It could also use its power to price discriminate between users by analyzing its data to determine which specific users most value its services. The merged firm might require those users to pay more for Comcast's broadband internet or Facebook's "free" social media services, for example, by showing some Facebook/Comcast users more advertisements than other users. And, if Facebook/Comcast achieved enough market power over time, their dominance might lead to development of less innovative products and services than in a truly competitive market.[9]

Despite these competitive risks, a merger between Facebook and Comcast would presumptively be allowed under current merger guidelines because these firms do not directly compete in a market for goods or services.[10] According to antitrust regulators in the United States, non-horizontal mergers (i.e. those between firms that do not directly compete) "merit a stronger presumption of being efficient" than horizontal mergers (i.e. those between firms that do directly compete).[11] Due to this presumption, non-horizontal mergers involving powerful firms with exclusive control over valuable data are overlooked by United States

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N.Y. TIMES (Feb. 28, 2018), https://www.nytimes.com/video/technology/100000005744020/facebooks-cat-and-mouse-game.html?rref=collection%2Fsectioncollection%2Ftechnology [https://perma.cc/R22Q-FG3D] (explaining "how artificial intelligence helps the [Facebook] giant tackle the constantly evolving threat of dangerous and offensive content").

9. *See, e.g.*, Sarah Aswell, *How Facebook is Killing*, VULTURE (Feb. 6, 2018), http://www.vulture.com/2018/02/how-facebook-is-killing-comedy.html [https://perma.cc/L75W-858X] (explaining how changes in Facebook's newsfeed algorithms have had negative effects on independent content creators such as Funny or Die). Additionally, a reduction in security innovation might have catastrophic consequences if, as a result, bad actors were more likely to breach Facebook/Comcast's information systems. Markets dominated by a single powerful firm might not have incentives to adopt heightened privacy standards (such as HTTPS, end to end encryption, and two-factor authentication) due to a lack of competition. *See* Chetan Gupta, *The Market's Law of Privacy: Case Studies in Privacy/ Security Adoption*, 73 WASH. & LEE L. REV. ONLINE 756, 760 (2017) (concluding that "[w]hile single actors/groups often do drive the adoption of a standard, they tend to be significant players in the industry or otherwise well positioned to drive adoption and diffusion" rather than new entrants to a market).

10. A merger between Facebook and Comcast would constitute a non-horizontal merger, because the firms do not directly compete for goods and services. Facebook primarily provides social media services while Comcast primarily provides Internet services. But, the two firms do directly compete in content creation and other ancillary ventures, meaning these components of the deal would be assessed under the Horizontal Merger Guidelines. For a detailed explanation, see *infra* Part II.

11. OECD, POLICY ROUNDTABLES: VERTICAL MERGERS 239 (2007), https://www.oecd.org/competition/mergers/39891031.pdf [https://perma.cc/5EFB-AH8F].

antitrust enforcement agencies such as the United States Department of Justice ("DOJ") and the Federal Trade Commission ("FTC").[12]

Regulators and courts need a framework to evaluate data-related mergers because these transactions often fall outside traditional analytical paradigms.[13] For example, in markets where consumers trade their data for "free" services, antitrust regulators may miscalculate market share by using the canonical Herfindahl-Hirschman Index ("HHI") because the HHI relies on dollar-value measurements to determine market concentration.[14] Commentators have proposed some alternatives to current quantitative tools based on market price for analyzing zero-price goods and services,[15] but regulators in the United States have yet to adopt these alternatives.[16] Notably, Professor Tim Wu has suggested that in the "attention economy," where consumers trade their attention and data for zero-price goods or services, regulators should define market share by the relative amount of time users engage with a service.[17]

In the analytical void of data-related mergers, an update to the Non-Horizontal Merger Guidelines ("NHMG") would provide a source of guidance. The Merger Guidelines are a set of documents drafted by the DOJ and FTC to communicate merger enforcement intentions and modes of analysis.[18] Though technically advisory, the Merger Guidelines have a powerful influence as a guide for business stakeholders, and courts often rely on the Merger Guidelines as a framework to analyze the legality of transactions.[19] For example, in the recent AT&T/Time Warner trial, the court frequently cited to the 1984 NHMG.[20] The court described the 1984 NHMG as a "helpful tool . . . for analyzing proposed

12. MAURICE E. STUCKE & ALLEN P. GRUNES, BIG DATA AND COMPETITION POLICY 127–40 (2016).

13. *Id.*

14. *See* U.S. DEP'T OF JUSTICE & FED. TRADE COMM'N, HORIZONTAL MERGER GUIDELINES 51 (2010) ("The HHI is calculated by summing the squares of the individual firms' market shares [determined by dollar-value revenues in the relevant market] . . . The HHI ranges from 10,000 (in the case of a pure monopoly) to a number approaching zero (in the case of an atomistic market).").

15. *See, e.g.*, John M. Newman, *Antitrust in Zero-Price Markets: Applications*, 94 WASH. U. L. REV. 49, 64–66 (2016) (suggesting the substitution of cost to users (in time and attention) for market price in the "small but significant and non-transitory increase in price" (SSNIP) test); Tim Wu, *Blind Spot: The Attention Economy and the Law*, ANTITRUST L. J. (forthcoming 2018) (manuscript at 29–31), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2941094 (proposing an Attentional SSNIP test that measures how consumers react to an increase in the advertising load for a given product).

16. *See generally* HORIZONTAL MERGER GUIDELINES, *supra* note 14 (continuing to rely on the HHI, SSNIP, and Hypothetical Monopolist Test for analysis).

17. Wu, *supra* note 15, at 2.

18. *See, e.g.*, Carl Shapiro, *The 2010 Horizontal Merger Guidelines: From Hedgehog to Fox in Forty Years*, 77 ANTITRUST L.J. 49, 57–58 (2010).

19. *See, e.g.*, United States v. Anthem, Inc., 236 F. Supp. 3d 171, 195 (D.D.C. 2017); United States v. Bazaarvoice, Inc., No. 13-CV-00133-WHO, 2014 WL 203966, at *28 (N.D. Cal. Jan. 8, 2014); United States v. H&R Block, Inc., 833 F. Supp. 2d 36, 52 (D.D.C. 2011); United States v. Waste Mgmt., Inc., 743 F.2d 976, 983 (2d Cir. 1984); United States v. Oracle Corp., 331 F. ·Supp. 2d 1098, 1117 (N.D. Cal. 2004). *Cf.* Steven C. Salop, *Invigorating Vertical Merger Enforcement*, 127 YALE L.J. 1962, 1984 (2018); Shapiro, *supra* note 18, at 64.

20. United States v. AT&T, Inc., 310 F. Supp. 3d 161, 192–94 (D.D.C. 2018).

mergers."[21] However, the value of the NHMG is questionable due to substantial changes in economic analysis and enforcement standards since this guidance was last updated in 1984.[22] For comparison, the Horizontal Merger Guidelines have been substantially updated three times since 1984: in 1992, 1997, and 2010.[23]

In addition to providing an updated framework for regulators to analyze data-related mergers, a revision of the NHMG might also provide much-needed guidance to courts in an inconsistent area of law. There is little modern legal precedent on non-horizontal mergers—the recent AT&T/Time-Warner merger trial is the only non-horizontal merger challenge to be tried to decision in federal court in almost forty years.[24] As a result, agency non-horizontal merger enforcement is unpredictable. For example, in 2017, the DOJ asked for asset divestitures in the non-horizontal merger of A&T and Time Warner, though the DOJ approved a similar non-horizontal merger between Comcast and NBC with behavioral remedies in 2011.[25] Ultimately, this type of ad hoc non-horizontal merger enforcement not only leads to inconsistent results for the parties at hand, but it also increases transaction costs for business stakeholders by casting doubt on harmless mergers that might provide beneficial efficiencies.[26]

This Note explains how updating the NHMG might help clarify regulators' enforcement intentions with regards to data-related mergers. Part I reviews the history of non-horizontal merger enforcement in the United States. Part II considers data's potential to harm consumers and create barriers to entry through network effects, switching costs, and consumer lock-in. Part III evaluates the effectiveness of agency enforcement actions in a few recent data-related mergers. Finally, Part IV proposes modifications to the NHMG to include guidance on non-price harms, foreclosure, entrenchment, and price discrimination in order to provide a clearer framework for stakeholders.

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21. *Id*. at 192 n.18 (quoting United States v. Anthem, Inc., 855 F.3d 345, 349 (D.C. Cir. 2017)).

22. *See e.g.*, Steven C. Salop & Daniel P. Culley, *Revising the US Vertical Merger Guidelines: Policy Issues and an Interim Guide for Practitioners*, 4 J. ANTITRUST ENFORCEMENT 1 (2015) [hereinafter Salop & Culley, *Revising Vertical Merger Guidelines*]; ANTITRUST MODERNIZATION COMM'N, REPORT AND RECOMMENDATIONS 68 (2007); Michael H. Riordan & Steven C. Salop, *Evaluating Vertical Mergers: A Post-Chicago Approach*, 63 ANTITRUST L.J. 513 (1995); Deborah L. Feinstein, Editor's Note, *Are the Vertical Merger Guidelines Ripe for Revision?*, 24 ANTITRUST 3 (2010).

23. Salop & Culley, *Revising Vertical Merger Guidelines*, *supra* note 22.

24. *See* Fruehauf Corp. v. FTC, 603 F.2d 345 (2d Cir. 1979).

25. James B. Stewart, *With AT&T and Time Warner, Battle Lines Form for an Epic Antitrust Case*, N.Y. TIMES (Nov. 16 2017), https://www.nytimes.com/2017/11/16/business/att-time-warner.html [https://perma.cc/9YT5-ZVMF].

26. *See generally* Salop & Culley, *Revising Vertical Merger Guidelines*, *supra* note 22.

I.
NON-HORIZONTAL MERGER ENFORCEMENT AND THE MERGER GUIDELINES

A. Non-Horizontal Merger Enforcement in the United States

Economic theory classifies mergers into three categories: horizontal, vertical, and conglomerate.[27] A horizontal merger involves direct competitors that sell identical products or close substitutes in the same geographic market before the merger occurs.[28] In a vertical merger, firms do not directly compete, but one firm serves as a supplier of inputs to the other before the merger.[29] The conglomerate category encompasses all other types of mergers.[30] Conglomerate mergers can range from firms with no economic relationship to mixed conglomerates with quasi-vertical or quasi-horizontal relationships, such as firms that sell similar products in different geographic markets.[31] Mergers of large firms with multiple divisions sometimes have horizontal, vertical, and conglomerate components. For example, a merger of Comcast and Time-Warner would have both horizontal and vertical components because Comcast creates and distributes TV content, and Time-Warner creates TV content.

On average, regulators have brought around forty horizontal merger challenges and 1 vertical merger challenge per year for the past decade.[32] Merger enforcement actions rarely result in trial. Instead the agencies and merging parties typically agree to a remedy, which can take one of two forms: a behavioral remedy where the merging firms agree to alter business practices (such as a commitment to supply critical inputs to rivals or enact firewalls between business divisions) or a structural remedy where the merging firms agree to divest assets. Regulators are notified of mergers and acquisitions via the Hart-Scott Rodino notification process, which requires parties to report deals over a minimum dollar threshold.[33] Generally, mergers involve acquisitions of assets, but long-term contractual arrangements, joint ventures, or acquisitions of intellectual property can also sometimes qualify as mergers.[34]

Competition in the United States has decreased over time as measured by corporate profits and industry concentration. Over the past thirty years, corporate

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27. ¶*900. Introduction; Basic Definitions*, *in* PHILLIP E. AREEDA & HERBERT HOVENKAMP, ANTITRUST LAW: AN ANALYSIS OF ANTITRUST PRINCIPLES AND THEIR APPLICATION (2017).

28. *Id.*

29. *Id.*

30. *Id.*

31. *Id.*

32. *See* Salop & Culley, *Revising Vertical Merger Guidelines*, *supra* note 22, at 4.; HSR Annual Reports, https://www.ftc.gov/policy/reports/policy-reports/annual-competition-reports (reporting, on average, 38.7 merger challenges per year from 2008–2017 (The average was manually calculated by the author from the number of enforcement actions stated in each HSR Annual Report from 2008–2017)).

33. *See* 16 C.F.R. § 801 (2018); *see also* FTC PREMERGER NOTIFICATION OFFICE, WHAT IS THE PREMERGER NOTIFICATION PROGRAM? AN OVERVIEW (2009).

34. AREEDA & HOVENKAMP, *supra* note 27.

profits as a share of GDP have increased by 50 percent.[35] Corporate profits are a measure of the competitiveness of an economy because in a perfectly competitive environment, profits should approximate zero. Between 1997 and 2012, the weighted average share of revenue accrued by the top four firms in each sector increased from 26 percent to 32 percent.[36] Inadequate non-horizontal merger enforcement since the adoption of the 1984 NHMG may have contributed to this trend. This Part follows the development of non-horizontal merger enforcement to show how enforcement has changed over time. Non-horizontal merger enforcement was initially strong after the Celler-Kefauver Amendments to the Clayton Act passed in 1950. But starting in the late 1970s, the Chicago School advanced a presumption against non-horizontal merger enforcement. This presumption against non-horizontal merger enforcement is still influential, though its dominance has waned.

1. Celler-Kefauver Amendments to the Clayton Act

Section 7 of the Clayton Act prohibits mergers and acquisitions "in any line of commerce" whose effects "may be substantially to lessen competition, or to tend to create a monopoly."[37] In 1950, Congress extended Section 7 to include vertical and conglomerate mergers through the Celler-Kefauver amendments to the Clayton Act.[38] Nevertheless, however, neither Section 7 of the Clayton Act, its legislative history, nor the Celler-Kefauver amendments defines what conduct substantially lessens competition or tends to create monopolies. This ambiguity has left courts broad discretion to formulate and change antitrust law in light of evolving economic analysis,[39] including by varying the standard of review applied to non-horizontal mergers over time.[40]

2. The Brown Shoe Period of Merger Analysis and Enforcement: Foreclosure and Entrenchment

After the Celler-Kefauver amendments to the Clayton Act were passed in 1950, courts applied a higher level of scrutiny in non-horizontal merger analysis.

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35. Carl Shapiro, Antitrust in an Age of Populism 18 (Oct. 24, 2017) (unpublished manuscript), https://faculty.haas.berkeley.edu/shapiro/antitrustpopulism.pdf [https://perma.cc/9GVV-W5AV].

36. *Too Much of a Good Thing*, ECONOMIST (Mar. 26, 2016), https://www.economist.com/briefing/2016/03/26/too-much-of-a-good-thing [https://perma.cc/CKH6-LVY6].

37. 15 U.S.C. § 18 (2012).

38. *See* H.R. REP. No. 1191, at 11 (1949) ("[T]he [Celler-Kefauver amendment] applies to all types of mergers and acquisitions, vertical and conglomerate as well as horizontal, which have the specified effects of substantially lessening competition or tending to create a monopoly.").

39. Shapiro, *supra* note 18, at 51.

40. AREEDA & HOVENKAMP, *supra* note 27, at ¶1002. The FTC and DOJ are the primary regulators of mergers and acquisitions, though State Attorneys General may challenge the legality of transactions as well. *See* 15 U.S.C. §§ 15, 26 (1964).

Two Supreme Court cases, *Brown Shoe*[41] and *Procter*,[42] epitomize this heightened standard of merger review. In those cases, the Court signaled its willingness to expand merger analysis by adding the foreclosure and entrenchment theories to the bare bones statutory text of the Clayton Act. The foreclosure theory of harm applies when a supplier uses its market power to limit or control a customer's access to an input. For example, one form of foreclosure known as product tying occurs when a printer seller requires those who purchase its printers to also buy the firm's printer cartridges.[43] On the other hand, the theory of entrenchment introduced by *Procter*, occurs when a merging firm confers a competitive advantage to an already dominant incumbent firm by raising barriers to entry.[44]

In 1962, the Supreme Court's decision in *Brown Shoe* established the paradigm for review of non-horizontal mergers.[45] The Supreme Court held that a merger between a shoe manufacturer and distributor violated Section 7 of the Clayton Act due to the merger's probable effect to substantially lessen competition.[46] The Court reasoned that a vertical merger or other tying arrangement might "deprive[] . . . rivals of a fair opportunity to compete" by foreclosing competitors from a stage of the supply chain.[47] *Brown Shoe* involved the merger of the third and eighth largest shoe retailer firms in the United States, Brown and Kinney, respectively.[48] Both firms also had substantial shares in the market for manufacturing shoes.[49] The Court found, based on Brown's prior conduct and testimony, that Brown was likely to use its ownership of Kinney to foreclose rival shoe manufacturers from Kinney retail stores.[50] The foreclosure from the merger of Kinney and Brown may have bordered on de minimus in isolation.[51] But the Court found that, in the context of Brown's past conduct and a trend toward vertical integration in the shoe retailer industry, the merger was likely to substantially lessen and foreclose competition.[52]

In *Brown Shoe*, the Court established a multi-factor test to assess whether foreclosure from a merger would exceed a permissible de minimis share of the market. The Court articulated three factors: the "nature and purpose of the arrangement," "concentration in the industry," and "the existence of a trend toward vertical integration."[53] Notably, the *Brown Shoe* court did not instruct

41. Brown Shoe Co. v. United States, 370 U.S. 294 (1962).
42. F.T.C. v. Procter & Gamble Co., 386 U.S. 568 (1967).
43. AREEDA & HOVENKAMP, *supra* note 27, at ¶1004.
44. *See* U.S. DEP'T OF JUSTICE, 1968 MERGER GUIDELINES (1968).
45. *Brown Shoe*, 370 U.S. at 294.
46. *Id.* at 334.
47. *Id.* at 324 (quoting H.R. REP. No. 1191, at 8 (1949)).
48. *Id.* at 297.
49. *Id.* at 331–32.
50. *Id.* at 328.
51. *Id.* at 332–34.
52. *Id.* at 334.
53. *Id.* at 328–32.

lower courts to consider pro-efficiency justifications for a merger, such as lower costs from supply chain coordination. As a result, lower courts "mechanical[ly]" followed the *Brown Shoe* Court's three-factor test for non-horizontal mergers.[54]

During the *Brown Shoe* period, courts and regulators also looked closely at conglomerate mergers and applied the entrenchment theory. In *FTC v. Procter & Gamble Co.*, the Supreme Court affirmed an FTC order to reverse a conglomerate merger between Procter & Gamble and Clorox.[55] At the time, Clorox maintained market shares as large as 72 percent of sales in some regional liquid bleach markets, and Procter & Gamble possessed a large advertising presence in the household good market.[56] The Court blocked the merger based on the entrenchment theory of competitive harm.[57] The Court found that the merger would entrench the firms' dominant incumbent positions by raising barriers to entry related to advertising in some household good markets.[58] The Court reasoned that "the substitution of the powerful acquiring firm for the smaller, but already dominant, firm may substantially reduce the competitive structure of the industry by raising entry barriers and by dissuading the smaller firms from aggressively competing."[59] The Court, citing its analysis in *Brown Shoe*, again did not consider the merger's potential pro-efficiency justifications.[60]

In drafting the 1968 Merger Guidelines, the DOJ followed the *Brown Shoe* approach to assessing non-horizontal mergers. These Guidelines included the de minimis foreclosure theory from *Brown Shoe* and the entrenchment theory from *Procter*.[61] Moving forward, lower courts applied the foreclosure and entrenchment theories from *Brown Shoe* and *Procter* as articulated by the 1968 Guidelines in a variety of industries.[62]

3. The Chicago School's Pro-Efficiency Merger Revolution

In the 1970s, the Chicago School and other commentators began to sharply criticize *Brown Shoe* analysis as applied to non-horizontal mergers. The Chicago School argued that *Brown Shoe* did not consider the efficiency gains likely to

54. *See* ABA SECTION OF ANTITRUST LAW, MERGERS AND ACQUISITIONS: UNDERSTANDING THE ANTITRUST ISSUES 369 (4th ed. 2015).

55. 386 U.S. 568 (1967).

56. *Id.* at 571–73.

57. *Id.* at 581.

58. *Id.* at 578.

59. *Id.*

60. *Id.* at 580 (citing Brown Shoe Co. v. United States, 370 U.S. 294, 344 (1962)) ("Possible economies cannot be used as a defense to illegality. Congress was aware that some mergers which lessen competition may also result in economies but it struck the balance in favor of protecting competition.").

61. 1968 MERGER GUIDELINES, *supra* note 44.

62. MERGER GUIDELINES, *supra* note 44; *see* ABA SECTION OF ANTITRUST LAW, *supra* note 54, at 409–10 (4th ed. 2015); *see, e.g.*, U.S. Steel Corp. v. F.T.C., 426 F.2d 592 (6th Cir. 1970); United States v. Wilson Sporting Goods Co., 288 F. Supp. 543 (N.D. Ill. 1968).

arise from non-horizontal mergers.[63] For example, vertical mergers can reduce transaction costs and increase efficiency by coordinating a supply chain.[64] Critics noted that the de minimis cutoff established by the 1968 Guidelines for vertical mergers was too low to have more than a temporary effect on prices. The Chicago School argued for a presumption against non-horizontal enforcement due to the "elimination of double marginalization" theory.[65] Under this theory, a merged firm will still set the same profit-maximizing price for its products as before the merger even if one or both firms in a non-horizontal merger have market power. In addition, the merger firm will pass any efficiency gains to consumers from, for example, coordinating its supply chain.[66]

In response to the Chicago School's criticism, agencies and courts dramatically changed enforcement of non-horizontal mergers. For instance, in *Alberta Gas Chemicals*, the Third Circuit rejected a claim of foreclosure and observed that "respected scholars question the anticompetitive effects of vertical mergers in general."[67] In 1982, the DOJ revised the NHMG to omit the foreclosure and entrenchment theories.

Since the 1980s, interest in some aspects of non-horizontal merger enforcement has returned. Though the Chicago School did identify some pro-efficiency justifications for non-horizontal mergers, non-horizontal mergers may still have anti-competitive effects. The "elimination of double marginalization" theory has been challenged on the basis that, in the long run, vertical or conglomerate integration might still harm competition.[68] A vertically integrated firm may foreclose competitors from essential inputs, and a conglomerate firm may leverage its power in one market to develop barriers to entry in another. A vertically integrated firm may also deter entry into its markets by requiring a potential competitor to perform a difficult and expensive coordinated entry into two or more markets at once to compete.[69] Despite advances in economic analysis, the Chicago School presumption against non-horizontal merger

63. *See generally* ROBERT H. BORK, THE ANTITRUST PARADOX: A POLICY AT WAR WITH ITSELF (1978).

64. Salop, *supra* note 19, at 1980.

65. BORK, *supra* note 63, at 226–27.

66. The accuracy of the elimination of double marginalization theory has been challenged. *See* Salop & Culley, *Revising Vertical Merger Guidelines*, *supra* note 22, at 26–27.

67. Alberta Gas Chemicals v. E.I. du Pont de Nemours & Co., 826 F.2d 1235, 1244 (3d Cir. 1987).

68. *See* Salop, *supra* note 19, at 1969 ("[The Elimination of Double Marginalization] theory is simple but invalid in all but the following extreme conditions: (i) the upstream merging firm is an unregulated monopolist, protected by prohibitive entry barriers; (ii) its product is used by downstream firms in fixed proportions with all other inputs; and (iii) the downstream market is perfectly competitive.").

69. In the long run, the monopolist may also be able to develop market power in multiple stages in the supply chain by deterring entry, then use that monopoly power to raise prices for other uses of inputs once competition in the input is eliminated.

enforcement remains embedded in practice and law, partially because agencies rarely bring enforcement actions in non-horizontal mergers.[70]

B. History of the Merger Guidelines

Originally issued in 1968, the Merger Guidelines have been substantially revised and reissued in 1982, 1984, 1992, 1997, and 2010. When the DOJ first issued the Guidelines in 1968, the Guidelines included rules for the analysis for both horizontal and non-horizontal mergers. The 1968 Guidelines focused the regulator's inquiry with relatively "simple rules" on market structure and market concentration, as a reaction to the Supreme Court's reasoning in *Brown Shoe*, which categorically condemned all non-horizontal mergers likely to substantially increase market concentration.[71]

Then in 1982, the DOJ updated the Horizontal and Non-Horizontal Merger Guidelines. The 1982 Guidelines marked a departure from the 1968 Guidelines. The 1982 Guidelines shifted focus away from market structure to market power—often a subtler and more difficult variable to measure.[72] The 1982 Guidelines included empirical analytical tools such as the Hypothetical Monopolist Test and the Herfindahl-Hirschman Index to aid agencies in measuring market power.[73] The 1982 Guidelines also applied a presumptive standard of efficiency for non-horizontal merger enforcement and omitted the foreclosure and entrenchment theories from *Brown Shoe* and *Procter* that had been included in the 1968 Guidelines.[74] The 1982 Guidelines were revised but substantially unchanged in 1984.[75]

In 1992, the DOJ and FTC jointly revised and issued the Horizontal Merger Guidelines for the first time, while leaving the Non-Horizontal Merger Guidelines unchanged. The DOJ and FTC issued the Guidelines together to promote coordination between the agencies in merger enforcement and review. The DOJ and FTC issued substantially updated Horizontal Merger Guidelines two more times, in 1997 and 2010, but the agencies have not revised the NHMG since 1984.

Since 1982, revisions of the Merger Guidelines have increasingly emphasized complex empirical tools for economic analysis, such as the gross upward pricing pressure index introduced by the 2010 Guidelines.[76] The empirical tools introduced by the Guidelines often rely on the observation of a non-zero market price.[77] The Guidelines' focus on measurable price effects may

70. Salop & Culley, *Revising Vertical Merger Guidelines*, *supra* note 22, at 4.
71. Shapiro, *supra* note 18, at 51.
72. *Id.* at 51.
73. *Id.*
74. *See* U.S. DEP'T OF JUSTICE, 1982 MERGER GUIDELINES (1982).
75. *See* 1984 MERGER GUIDELINES, *supra* note 44.
76. Shapiro, *supra* note 18, at 74.
77. *Id*. at 51.

lead regulators to overlook non-price effects that are more difficult to measure, such as effects on quality or innovation.[78]

C. Purpose of the Merger Guidelines

The goal of the Guidelines has remained substantially the same over the years: providing predictability and guidance to business stakeholders involved in mergers and acquisitions. In the 1968 Guidelines, the stated purpose was to "acquaint the business community, the legal profession, and other interested groups and individuals with the standards currently being applied by the Department of Justice in determining whether to challenge corporate acquisitions and mergers."[79] Similarly, the 1982 Guidelines sought to increase "predictability" by "describ[ing] the general principles and specific standards normally used by the Department an [sic] analyzing mergers."[80] Likewise, the 2010 Guidelines aim to provide "transparency" to the business community and a "framework" for antitrust analysis of mergers by courts.[81]

1. Criticism of the NHMG and Calls for Revision

The NHMG, last revised in 1984, fail to provide meaningful guidance.[82] They are of limited use to practitioners and courts due to changes in economic analysis and enforcement standards since 1984.[83] The 1984 NHMG include guidance on potential competitive harms from elimination of potential competitors, increased barriers to entry, and evasion of rate regulation.[84] But they provide no guidance on foreclosure—the theory of harm alleged in 68 percent of non-horizontal merger enforcement actions brought by the DOJ and FTC from 1995 to 2015.[85] Misuse of competitors' sensitive information, a theory of harm which usually involves mergers for the purpose of gaining access to a competitor's pricing information, was also omitted from the 1984 NHMG. This

78. Salop, *supra* note 19, at 1979; Shapiro, *supra* note 18, at 84.

79. 1968 MERGER GUIDELINES, *supra* note 44.

80. 1982 MERGER GUIDELINES, *supra* note 74.

81. *See* HORIZONTAL MERGER GUIDELINES, *supra* note 14.

82. *See* U.S. DEP'T OF JUSTICE, 1984 MERGER GUIDELINES (1984); *see also* Salop, *supra* note 19, at 1971; A.B.A. SEC. ANTITRUST L., PRESIDENTIAL TRANSITION REPORT: THE STATE OF ANTITRUST ENFORCEMENT 7–8 (Jan. 2017), https://www.americanbar.org/content/dam/aba/publications/antitrust_law/state_of_antitrust_enforcement.authcheckdam.pdf [https://perma.cc/NQ37-UFGT]; Salop & Culley, *Revising Vertical Merger Guidelines*, *supra* note 22; James Langenfeld, *Non-Horizontal Merger Guidelines in the United States and the European Commission: Time for the United States To Catch Up?*, 16 GEO. MASON L. REV. 851, 851–52 (2009); ANTITRUST MODERNIZATION COMMISSION, REPORT AND RECOMMENDATIONS 68 (Apr. 2007), http://govinfo.library.unt.edu/amc/report_recommendation/amc_final_report.pdf [https://perma.cc/X96R-LX6L].

83. *See* ANTITRUST MODERNIZATION COMMISSIONN, *supra* note 82, at 68; Feinstein, *supra* note 22, at 3; Riordan & Salop, *supra* note 22.

84. *See* 1984 MERGER GUIDELINES, *supra* note 82.

85. Salop & Culley, *Revising Vertical Merger Guidelines*, *supra* note 22, at 12.

theory has been the basis for the second most merger enforcement actions between 1994 and 2015, after the foreclosure theory.[86]

Due to the omission of these theories of harm, regulators' current enforcement policy for non-horizontal mergers is much more restrictive than the 1984 NHMG.[87] Yet, despite changes in economic analysis and merger enforcement activity, the 1984 NHMG are still technically in effect. The apparent contradictions between observed agency practice and the NHMG have caused commentators to call these Guidelines "obsolete."[88]

Further, the Chicago School presumption against non-horizontal merger enforcement embodied by the 1984 NHMG may be misguided. The Chicago School theory does not warrant a presumption because elimination of double marginalization is not necessarily merger specific.[89] And the elimination of double marginalization theory only applies in specialized circumstances—the theory would not apply if, for instance, two merging firms are each other's only potential competitors in a market.[90] And in many markets, absent any efficiencies, non-horizontal mergers create the same inherent upwards-pricing pressures as horizontal mergers between direct competitors.[91] Whether the beneficial efficiencies outweigh inherent upwards-pricing pressure in a particular non-horizontal merger is a question of fact rather than theory that does not warrant a presumption toward non-enforcement.[92] Among others, Steven C. Salop and Daniel P. Culley have called for revision to the current NHMG, outlining several reasons why the guidelines are misaligned with current economic theory or agency enforcement activity.[93]

2. Agency Defenses of the NHMG

Despite calls for revision, agencies have no appetite for revision of the NHMG. Former Director of the FTC Deborah L. Feinstein said in 2010 that the agency had no plans to revise the NHMG.[94] Feinstein stated that because non-horizontal merger enforcement is complex, case specific, and few actions are brought, revising the NHMG would not be worth regulatory resources.[95]

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86. *Id*.

87. *Id.*

88. A.B.A. SEC. ANTITRUST L., THE STATE OF FEDERAL ANTITRUST ENFORCEMENT 37 (2004), https://www.americanbar.org/content/dam/aba/administrative/antitrust_law/comments_state_of_fed_enforc.authcheckdam.pdf [https://perma.cc/EPR2-9ZV8].

89. Salop, *supra* note 19, at 1971.

90. *Id.* at 1969.

91. *See* Serge Moresi & Steven C. Salop, *vGUPPI: Scoring Unilateral Pricing Incentives in Vertical Mergers*, 79 ANTITRUST L.J. 185, 190 (2013).

92. Salop, *supra* note 19, at 1974.

93. Salop & Culley, *Revising Vertical Merger Guidelines*, *supra* note 22.

94. Feinstein, *supra* note 22, at 6–7.

95. *Id.*; *see also* Jeffrey Church, *Vertical Mergers*, *in* 2 ISSUES IN COMPETITION LAW AND POLICY 1455, 1498–1500 (ABA Section of Antitrust Law 2008).

Feinstein also noted that, though the NHMG's theories were admittedly outdated, the NHMG would not be revised because the analysis of non-horizontal mergers is well observed by interested stakeholders from past enforcement decisions and informal guidance.[96] However, Feinstein's explanations seem to be at odds with each other: if agency non-horizontal enforcement intentions and theories are complex and rare, it seems unlikely that stakeholders can infer agencies' intentions from past enforcement actions.[97]

In sum, the current ineffectiveness of the NHMG leaves practitioners, courts, and business stakeholders to "muddle through" by relying on the ineffective guides of inconsistent past enforcement actions and ambiguous agency guidance.[98] This is troubling due to the increasing economic importance of data as an input and product. Agencies have an important role in reviewing data-related mergers that may fall outside the traditional analytic paradigms of the Merger Guidelines.

II.
COMPETITIVE SIGNIFICANCE OF DATA ASSETS

Regulators' lessened scrutiny of data-related mergers may be due to the relatively recent rise of personal data as a valuable input for firms. The five largest publicly traded firms by market capitalization in the United States are Apple Inc. ("Apple"), Alphabet, Inc. ("Google"), Microsoft Corporation ("Microsoft"), Facebook, and Amazon.com, Inc. ("Amazon"). Of these firms, only Microsoft boasted the same title in 2006.[99] These technology firms derive their perceived value from intangible assets and intellectual property, such as control over internet platforms or exclusive data flows, rather than physical assets.[100] And these firms' massive values have made data an important asset in the world economy. Based on this trend, the Economist noted that "[t]he world's most valuable resource is no longer oil, but data."[101] Technology firms have exploited the value of this data via the "surveillance business model," where

96. Feinstein, *supra* note 22, at 6–7.

97. Salop & Culley, *Revising Vertical Merger Guidelines*, *supra* note 22.

98. *Id.*

99. Jonathan Taplin, Opinion, *Is it Time to Break Up Google?*, N.Y. TIMES (Apr. 24, 2017), https://www.nytimes.com/2017/04/22/opinion/sunday/is-it-time-to-break-up-google.html [https://perma.cc/L8H2-U9ZS].

100. By one estimate, intangible assets comprised 84 percent of all assets owned by companies in the S&P 500 in 2015. *See Intangible Asset Market Value Study*, OCEAN TOMO (2015), http://www.oceantomo.com/intangible-asset-market-value-study. For example, Facebook's physical assets are worth 13 billion dollars, but its market capitalization is over 500 billion dollars. *Compare Facebook Inc. Analysis of Property, Plant and Equipment,* STOCK ANALYSIS ON NET, https://www.stock-analysis-on.net/NASDAQ/Company/Facebook-Inc/Analysis/Property-Plant-and-Equipment [https://perma.cc/LBB9-SZLJ], *with Facebook, Inc.*, YAHOO FINANCE, https://finance.yahoo.com/quote/FB [https://perma.cc/HYY5-CAA7].

101. *The World's Most Valuable Resource is No Longer Oil, but Data*, ECONOMIST (May 6, 2017), http://www.economist.com/news/leaders/21721656-data-economy-demands-new-approach-antitrust-rules-worlds-most-valuable-resource [https://perma.cc/9VW4-TMXZ].

firms collect individuals' personal data and monetize this information by, for example, selling the data to advertisers or other third parties.[102] Often, users provide their personal data to firms in exchange for "free" services, such as social media or internet search capabilities.[103]

As well as a valuable product, data can also be a powerful tool in markets. By analyzing consumer data, firms can develop insights for new innovative products and improvements to existing products.[104] More disturbingly, information asymmetries between users and platform providers can lead to price discrimination and market failure. For example, ride sharing service Uber Technologies, Inc. ("Uber") might selectively raise prices for individuals based on information the firm collects on them. This could result in Uber charging higher prices to selected individuals— for example, women looking for a ride late at night, based on the theory that they might be less willing to walk home alone and thus more willing to pay higher prices.[105] This type of discrimination, called behavioral based price discrimination ("BBPD"), is widespread among internet retailers.[106] Perhaps most concerning, BBPD is easy to implement and difficult to detect, especially in the case of internet platforms that use complex algorithms to determine pricing, such as Uber and Amazon.[107]

Though difficult to measure, the rate of data-related mergers appears to be growing. According to the Organisation for Economic Co-operation and Development (OECD), "big data related" mergers doubled between 2008 and 2012—from 55 to 134."[108] As a result, regulatory interest in the potential competitive harms from platforms and big data has also grown. In a 2015 interview, Margethe Vestager, the European Commissioner for Competition, described data as "the new currency of the Internet."[109] Consumers trade data in

102. Bruce Schneier, *Surveillance as a Business Model*, SCHNEIER ON SECURITY (Nov. 25, 2013), https://www.schneier.com/blog/archives/2013/11/surveillance_as_1.html [https://perma.cc/EU8N-7FVW].

103. *See* Wu, *supra* note 15, at 2.

104. *See* Isaac, *supra* note 8.

105. *See* Ariel Dobkin, Note, *Information Fiduciaries in Practice: Data Privacy and User Expectations*, 33 BERKELEY TECH. L. J. (forthcoming 2018) (manuscript at 21–22).

106. For example, BBPD has been observed in Amazon's pricing of DVDs on its internet platform since 2000. *See* Linda Rosencrance, *Amazon Charging Different Prices on Some DVDs*, COMPUTERWORLD (Sep. 5, 2000), https://www.computerworld.com/article/2597093/retail-it/amazon-charging-different-prices-on-some-dvds.html [https://perma.cc/C8BU-67T3]. BBPD has only increased since 2000. *See* Jerry Useem, *How Online Shopping Makes Suckers of Us All*, ATLANTIC (May 2017), https://www.theatlantic.com/magazine/archive/2017/05/how-online-shopping-makes-suckers-of-us-all/521448 [https://perma.cc/NK3K-YNKT].

107. *See* Jack M. Balkin, *Information Fiduciaries and the First Amendment*, 49 UC DAVIS L. REV. 1183, 1187–88 (2016).

108. EUROPEAN DATA PROTECTION SUPERVISOR, REPORT OF WORKSHOP ON PRIVACY, CONSUMERS, COMPETITION AND BIG DATA 1–2 (2014), https://edps.europa.eu/sites/edp/files/publication/14-07-11_edps_report_workshop_big_data_en.pdf [https://perma.cc/LTQ3-PK69].

109. *Margrethe Vestager: Lewis Crofts and Robert McLeod in Conversation with Europe's New Competition Commissioner*, MLEX INTERVIEW: SPECIAL EDITION 5 (Jan. 22, 2015),

exchange for valuable services such as internet search, social networking, email, and other "free" services. Commissioner Vestager suggested that evaluating data-related mergers is particularly important because "[t]he more data you can collect, the more you know, the better product you can provide, but also the more powerful will you be towards others."[110] Kazuyuki Sugimoto, head of the Japan Fair Trade Commission, said that exclusive data sets and machine learning techniques might create incumbent firms with "insuperable competitive advantage[s] over new entrants."[111] Mr. Sugimoto noted that incumbent firms might use market power "to collect improper data, keep[] data exclusive in order to maintain monopoly power, or us[e] it to prevent a customer switching services."[112] In 2015, Deborah L. Feinstein, then Director of the FTC, acknowledged the "unique" challenges of merger enforcement in markets where data is a product or key input.[113] Feinstein also noted the potential negative effects on consumer privacy that data-related mergers might facilitate.[114]

Merger enforcement in industries that affect consumer privacy is particularly important because after a merger has been consummated, consumers' ability to protect their digital privacy rights through individual causes of action may be limited by boilerplate arbitration clauses in terms of service.[115] Even in the rare instance that consumers are not bound by arbitration clauses, individual suits often still face significant barriers such as standing and proving damages.[116] The FTC and State Attorneys General face less of these obstacles than consumers, but these regulators protect consumer privacy reactively rather than proactively and agency resources are limited.[117]

A. Competitive Harms from Switching Costs and Network Effects

The main economic harms to consumers from data-related mergers are likely to arise from network effects and consumer switching costs. Network effects create barriers to entry for competitors by increasing the effectiveness of larger networks. A switching cost is a direct cost incurred by a consumer from

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https://mlexmarketinsight.com/db_images/special-reports-pdf/MLex-Interview-with-Margrethe-Vestager-Jan-2015.pdf [https://perma.cc/7DBY-K6R4].

110. *Id*.

111. Robin Harding, *Japan Considers Tough Anti-Monopoly Rules on Data*, FINANCIAL TIMES (July 15, 2017), https://www.ft.com/content/a2e4f05c-66ae-11e7-8526-7b38dcaef614 (last visited Nov. 12, 2018).

112. *Id*.

113. Deborah Feinstein, *Big Data in a Competition Environment*, CPI ANTITRUST CHRONICLE (May 29, 2015), https://www.competitionpolicyinternational.com/big-data-in-a-competition-environment [https://perma.cc/53C8-JC28].

114. *Id.*

115. MARGARET JANE RADIN, BOILERPLATE: THE FINE PRINT, VANISHING RIGHTS, AND THE RULE OF LAW 7–12 (2013).

116. *See, e.g.*, Angelo A. Stio III, Jan Levine & William Gibson, *Standing and the Emerging Law of Data Breach Class Actions*, N.J. LAW. 49 (Apr. 2015).

117. *See* Daniel J. Solove, *Identity Theft, Privacy, and the Architecture of Vulnerability*, 54 HASTINGS L.J. 1227, 1232–34 (2003).

switching to a different brand, supplier, or product.[118] Switching costs can be categorized as both financial, such as a cancellation fee, and psychological, such as brand loyalty.[119] Consumer switching costs give firms market power over consumers in markets characterized by repeated transaction.[120] In turn, switching costs tend to reduce innovation and consumer choice because "when products are artificially differentiated by switching costs, firms' incentives to differentiate their products in any real, functional, way are reduced."[121] The result is that switching costs and network effects, especially when both are present, have the potential to lock consumers in to using a product or service by creating a collective inertia that prevents consumers from switching to a competitor network.[122] Ultimately, firms can use the market power that results from collective inertia to influence and control consumers.

Perhaps unsurprisingly, the presence of network effects and switching costs influences firm strategy. For instance, in markets with switching costs or network effects, firms typically begin by developing market share through a subsidized market price. Then, when a firm has gained enough market share to deter entry by competitors, the firm raises prices to increase profits.[123] Alternatively, a firm may gain the market power necessary to deter entry and raise prices by simply purchasing its competitors. These network effects and switching costs can explain strategies that might otherwise seem paradoxical, such as below cost pricing strategies by rapidly growing platforms like Amazon and Uber.[124]

1. Network Effects and Switching Costs Related to Data

a. Network Effects Arising from Data

Network effects can arise from a firm's exclusive control over data. Data becomes more valuable for enhanced insight and decision-making when coupled with innovative forms of information processing, such as machine learning.[125] This type of data processing is often referred to as "big data."[126] Big data is commonly characterized by four features: "the *volume* of data; the *velocity* at

118. *See* Joseph Farrell & Paul Klemperer, *Coordination and Lock-in: Competition with Switching Costs and Network Effects*, *in* 3 HANDBOOK INDUS. ORG. 1967, 1972 (M. Armstrong & R. Porter eds., 2007).

119. Paul Klemperer, *Competition when Consumers Have Switching Costs: An Overview with Applications to Industrial Organization, Macroeconomics, International Trade*, 62 REV. ECON. STUD. 515, 517–19 (1995).

120. *See id*. at 515.

121. *Id.* at 516, 532.

122. *See* Farrell & Klemperer, *supra* note 118, at 2052.

123. *See* David S. Evans, *Why the Dynamics of Competition for Online Platforms Leads to Sleepless Nights, but not Sleepy Monopolies* 34 (Working Paper Aug. 23, 2017).

124. *See, e.g*., Lina M. Khan, Note, *Amazon's Antitrust Paradox*, 126 YALE L. J. 710, 747–56, 787 (2017).

125. EXEC. OFF. PRESIDENT: PRESIDENT'S COUNCIL OF ADVISORS ON SCI. AND TECH., REPORT TO THE PRESIDENT: BIG DATA AND PRIVACY: A TECHNOLOGICAL PERSPECTIVE (May 2014).

126. *Id.* at 2.

which data is collected, used, and disseminated; the *variety* of data; and finally the *value* of data."[127] All these characteristics have increased rapidly over the past decade.[128] The increase in volume, velocity, variety, and value of data has added to the competitive significance of big data to firms. In response, firms have increasingly pursued strategies to extract value from their data assets and to collect more valuable data.[129]

Data is especially likely to create barriers to entry from network effects when paired with artificial-intelligence algorithms. Large sets of training data are often necessary for developing successful artificial-intelligence algorithms, such as machine learning. In the case of machine learning, "[m]ore data leads to better and better predictions."[130] But in the context of social data collected from consumers, training data can be difficult to obtain. For example, in 2011, legal-discovery algorithms still used a training data set collected in 2003 from the prosecution of Enron.[131]

Once a training data set has been collected, it can be used for a variety of purposes. For example, Facebook uses the data from its users' newsfeeds to design products and services for subsidiary companies, such as Instagram.[132] The data collected by Facebook from its 2.2 billion users allows it to provide unique services, such as targeting specific ads to "mothers who live in Minneapolis and like churches and the Minnesota Twins."[133] Facebook can even use insights from its data to target non-users via "lookalike" targeting, where Facebook infers "what a non-Facebook user might be interested in based on a relatively small amount of information."[134] Firms without access to similar data sets cannot provide these innovative services; instead they must buy look-alike audiences from data brokers (if available), a time-consuming and expensive proposition. This vast flow of personal data available to Facebook also benefits users: for example, it allows Facebook to develop innovative algorithms to curate news

127. STUCKE & GRUNES, *supra* note 12, at 16.

128. *Id.* at 16–28.

129. *Id*. at 15–28; Brynjolfsson & McAfee, *supra* note 6.

130. Brynjolfsson & Mcafee, *supra* note 6129; *see also* Alon Halevy, Peter Norvig & Fernando Pereira, *The Unreasonable Effectiveness of Data*, 24 IEEE INTELLIGENT SYSTEMS 8, 9 (Brian Brannon ed., IEEE Computer Society, Mar./Apr. 2009) ("[S]imple models and a lot of data trump more elaborate models based on less data.").

131. John Markoff, *Armies of Expensive Lawyers, Replaced by Cheaper Software*, N.Y. TIMES (Mar. 5, 2011), https://www.nytimes.com/2011/03/05/science/05legal.html [https://perma.cc/X5BD-AL3C].

132. *See* Isaac, *supra* note 8104 ("Instagram plans to rely on its machine-learning technology and a mix of signals to determine the order of photos and videos in users' feeds, including the likelihood a person will be interested in the content, the timeliness of the posts and the relationship between the two users.").

133. Scott Shane & Vindu Goel, *Fake Russian Facebook Accounts Bought $100,000 in Political Ads*, N.Y. TIMES (Sept. 6, 2017), https://www.nytimes.com/2017/09/06/technology/facebook-russian-political-ads.html [https://perma.cc/L5V7-A5MQ].

134. Jack Marshall, *Facebook Wants to Help Sell Every Ad on the Web*, WALL ST. J. (May 7, 2016), https://www.wsj.com/articles/facebook-wants-to-help-sell-every-ad-on-the-web-1464321603 [https://perma.cc/X5KY-9RBB].

feeds, and it enables users to search for and connect with 2.2 billion other active users.[135]

Similarly, in the context of search engines such as Google and Bing, commentators have noted that "increased market usage and share correlates with increased quality."[136] This increase in quality is due to what Grunes and Stucke call "learning-by-doing" network effects. Dominant search engines collect more valuable training data because "as more people use the search engine and the more searches they run, the more trials the search engine's algorithm has in predicting consumer preferences, the more feedback the search engine receives of any errors, and the quicker the search engine can respond by recalibrating its offerings."[137] This "learning-by-doing" network effect entrenches incumbent networks by creating a "data" barrier to entry for potential competitors. By using the network effects from its exclusive data, Google has obtained and maintained its dominant position in the market for internet search.[138] In 2017, Google routed 95 percent of mobile search traffic and 63 percent of desktop search traffic.[139]

b. Switching Costs and Data

Data storage has the potential to create switching costs and consumer lock-in. Data storage creates switching costs because, once data is stored, it can be difficult to transfer the data to another location.[140] This difficulty arises because users often do not know what personal data is stored by a firm, and data storage techniques may be protected as intellectual property.[141] Even without these barriers, data transfer between firms may still be difficult due to the incompatibility of various data management software programs that firms employ.[142] The difficulty of transferring data increases transaction costs between firms and, in the context of internet platforms, contributes to the difficulty of potential competitors attempting to build enough market share to compete with an incumbent network.

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135. *See* Isaac, *supra* note 104.

136. STUCKE & GRUNES, *supra* note 12, at 174.

137. *Id.* at 175.

138. Interview with Jonathan Rosenberg, Senior Vice President Product Mgmt. and Mkt., Google, Inside the Black Box Technology and Innovation at Google (Feb. 27, 2008), http://bit.ly/jrosenberg2008 [https://perma.cc/Y8E3-24H6].

139. *Market Share of Search Engines in the United States from December 2008 to 2017*, STATISTA (Feb. 2018), https://www.statista.com/statistics/269668/market-share-of-search-engines-in-the-united-states [https://perma.cc/9HH2-E7XG]; *Market Share of Selected Leading Mobile Search Providers in the United States from October 2012 to January 2018*, STATISTA (Aug. 2018), https://www.statista.com/statistics/511358/market-share-mobile-search-usa [https://perma.cc/5EK7-TGZJ].

140. Daniel L. Rubinfeld & Michal S. Gal, *Access Barriers to Big Data*, 59 ARIZ. L. REV. 339, 364 (2017).

141. *Id.*

142. *Id.*

Due to the difficulty of transferring data, a consumer makes an investment when the consumer provides personal information to a firm.[143] For example, when a user provides profile information to Facebook, that user is investing in Facebook due to the time and difficulty of replicating the data for another social media service.[144] And because users are locked-in to their investment due to the switching costs associated with transferring data, firms that collect this data have an incentive to engage in opportunistic behavior, such as changing privacy policies, discriminating against users who highly value a service, or increasing the price of services for preexisting users.[145] Firms that hold consumers' data assets can exert this power because consumers cannot exit these transactions without losing their initial investments.[146] For example, in the context of social platforms, these investments include "the cost to learn the application, delete and regenerate data, the exclusive activities such as games available on the network, and the social relations established through the existing platform."[147]

B. Harm from Switching Costs and Network Effects as Recognized by US Courts

Courts have long recognized that switching costs and network effects may be harmful to consumers. For example, the Supreme Court recognized the potential harms of switching costs in *Eastman Kodak Co. v. Image Technical Services*.[148] In *Kodak,* the Court held that tying arrangements in aftermarkets can be anticompetitive and illegal under US antitrust law. Aftermarket tying occurs when a company sells a product with the condition that the consumer must purchase another product. The Court noted in *Kodak* that the "existence of significant information and switching costs . . . could create a less responsive connection between service and parts prices and equipment sales" in aftermarkets.[149] This disconnect would allow firms to exert monopoly power in the aftermarket for repair parts because consumers would be locked-in to using a firm's equipment due to the high cost of switching products. For example, after a consumer buys a printer, that consumer may be locked into purchasing ink cartridges from the same firm, if that firm enacts barriers to prevent other firms from supplying ink cartridges.

Similarly, in *United States v. Microsoft Corp.*,[150] the District of Columbia Circuit held that barriers to entry created by Microsoft in the market for software application development were anticompetitive and illegal. In *Microsoft*, the court

143. Allen P. Grunes, *Another Look at Privacy*, 20 GEO. MASON L. REV. 1107, 1132 (2013).
144. *Id.*
145. *Id.*
146. *Id.*
147. Jan Whittington & Chris Jay Hoofnagle, *Unpacking Privacy's Price*, 90 N.C. L. REV. 1327, 1354 (2012).
148. 504 U.S. 451, 473 (1992).
149. *Id.* at 473.
150. 253 F.3d 34 (D.C. Cir. 2001).

identified a "chicken-and-egg" problem for computer application development platforms. Users want to use platforms that have many available applications, and developers want to develop applications for platforms that have many available users.[151] Microsoft exploited this "chicken-and-egg" problem by foreclosing some competitors' applications from access to its dominant platform. The court held that Microsoft's conduct constituted illegal anticompetitive conduct because Microsoft engineered incompatibility in an effort to increase switching costs artificially and create consumer lock-in.[152]

C. Multihoming and Potential Benefits of Data-Related Mergers

Despite the potential barriers to entry that switching costs and network effects pose, some aspects of internet platforms may make maintaining monopoly power more difficult. For instance, network effects may not pose a powerful deterrent to entry for online platforms vulnerable to entry from multihoming.[153] Multihoming is when a consumer uses multiple networks (for example, having a social media profile on both Facebook and LinkedIn). If consumers can effectively multihome, then switching costs and barriers to entry are lower for new competitors.[154] Users can try out multiple networks while still enjoying the benefits that large incumbent networks provide. Multihoming forces platforms to engage in constant competition.[155]

Large data sets can also directly provide benefits to consumers. Data-based algorithms might improve products or services and lead to efficiencies that reduce costs. And product or service development and innovation might uniquely require access to sufficiently large data sets. The D.C. district court cited these potential efficiencies as a reason to allow the AT&T/Time Warner merger. The court described the merger as necessary for AT&T/Time Warner to develop a data set of its own to compete with dominant internet platforms, such as Facebook and Google, in targeting consumers with advertising and content.[156]

Despite the potentially beneficial efficiencies from data-related mergers, if the ability for users to multihome is limited, then the potential harms may substantially outweigh any efficiencies gained. This is especially true of firms that have dominant positions in physical or legal infrastructure, such as Uber, which can leverage their influence to increase barriers to multihoming. For

151. *Id.* at 55 ("[T]he 'applications barrier to entry' – stems from two characteristics of the software market: (1) most consumers prefer operating systems for which a large number of applications have already been written; and (2) most developers prefer to write for operating systems that already have a substantial consumer base. . . . This 'chicken-and-egg' situation ensures that applications will continue to be written for the already dominant Windows, which in turn ensures that consumers will continue to prefer it over other operating systems.").

152. *See, e.g.*, *id.* at 76–77.

153. Evans, *supra* note 123, at 7.

154. *Id.* at 14 n.30.

155. *Id.* at 21.

156. United States v. AT & T Inc., 310 F. Supp. 3d 161, 164 (D.D.C. 2018).

example, Uber can punish or threaten to punish drivers or riders who use multiple ride-sharing apps.[157] Multihoming also may be limited by the very nature of certain industries; for example, a consumer typically only chooses one broadband internet provider per household. In these types of industries without multihoming, data-related competitive advantages may have a more lasting and damaging impact on consumers.

III.
EXAMPLES OF RECENT DATA-RELATED MERGERS

Regulators are more likely to overlook the economic harms from data in zero-price markets, such as internet search and social media services.[158] Yet, the substantial value internet services provide to users should render these markets economically relevant and subject to regulatory scrutiny.[159]

Agencies are effective at preventing or reversing mergers between firms that directly compete in a market for data priced in dollar value. For example, the agencies brought successful enforcement actions in Dun & Bradstreet/QED,[160] a merger of educational marketing data sellers; Bazaarvoice/PowerReviews,[161] a merger of product rating and review platforms; and Nielsen/Arbitron,[162] a merger of media research firms. The data markets in those enforcement actions shared the common characteristic of having transactions with relatively easy to quantify dollar values.

This Part examines in depth three recent data-related mergers: Nielsen/Arbitron, Google/ITA, and Facebook/Instagram. Regulators do not typically release the documents evaluated if a merger is approved, so inferring a regulator's reasoning in approving a merger can be difficult. Even with this difficulty, it is apparent that non-horizontal and non-price data-related mergers have received lessened scrutiny.[163] Lessened scrutiny of non-price data-related mergers may be due to a bias towards market effects in dollar values based on guidance from the Merger Guidelines. The 1984 NHMG exacerbate tendencies toward under-enforcement because they do not provide guidance on non-price harms, foreclosure, entrenchment, and price discrimination.

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157. *See, e.g.*, Nitasha Tiku, *Lyft Claims Uber Sabotaged Drivers by Canceling More Than 5,000 Rides*, VALLEY WAG (Aug. 12, 2014, 10:15 AM), http://valleywag.gawker.com/lyft-claims-uber-sabotaged-drivers-by-canceling-more-th-1619800024 [https://perma.cc/287V-HDRC].

158. Grunes, *supra* note 143, at 1132.

159. *Id.*; John M. Newman, *Antitrust in Zero-Price Markets: Foundations*, 164 U. PA. L. REV. 149, 206 (2015).

160. In re The Dun & Bradstreet Corp., 150 F.T.C. 144 (2010).

161. United States v. Bazaarvoice, Inc., No. 13-CV-00133-WHO, 2014 WL 203966 (N.D. Cal. Jan. 8, 2014).

162. Decision and Order, In re Nielsen Holdings N.V., and Arbitron Inc., No. C-4439 (F.T.C. Feb. 24, 2014), https://www.ftc.gov/system/files/documents/cases/140228nielsenholdingsdo.pdf [https://perma.cc/9QQD-HZUZ].

163. *See* Wu, *supra* note 15, at 25–28.

A. Nielsen/Arbitron

The Nielsen/Arbitron merger is an example of a conglomerate data-related merger that the DOJ successfully challenged. In 2012, Nielsen Holdings N.V. ("Nielsen") reached a deal to acquire Arbitron, Inc. ("Arbitron") for 1.26 billion dollars. At the time, Nielsen and Arbitron both specialized in audience measurement services. Nielsen dominated television audience measurement service with 80 percent of the market, while Arbitron dominated radio audience measurement services with 90 percent of the market.[164] Both Nielsen and Arbitron were in the process of developing an innovative cross-platform measurement service, which would measure unduplicated audience exposure to content across television, radio, PC, smartphones, and tablets. Nielsen and Arbitron were the only two firms developing this cross-platform audience measurement service, which required access to both Nielsen's and Arbitron's large sets of demographic data and advanced audience measurement analytic technology.

The FTC filed a complaint challenging the Nielsen/Arbitron merger on February 24, 2014. The FTC's complaint alleged that the Nielsen/Arbitron merger would eliminate competition in the development of cross-platform audience measurement services because Nielsen and Arbitron were the only two firms with the data and analytical resources necessary to develop this service.[165] The merger was eventually approved when Nielsen agreed to a consent decree that required the firm to divest some of its analytical tools and to license the data necessary for development of a rival cross-platform audience measurement service to an approved buyer for eight years.[166] The FTC's consent decree also required that Nielsen provide technical assistance to the approved buyer at cost and that Nielsen remove barriers to hiring the key Arbitron personnel.[167] Nielsen agreed to sell the data assets and analytical tools to comScore, Inc., which subsequently developed a rival cross-platform audience measurement service.[168] The challenge of the Nielsen/Arbitron merger by regulators was likely successful because the data and analytical tools necessary for developing the cross-platform service had a non-zero market price that could be evaluated under the Guidelines' traditional analytical framework.[169]

164. Scott Moritz & Edmund Lee, *Nielsen to Buy Arbitron for $1.26 Billion*, BLOOMBERG TECH. (Dec. 18, 2012), https://www.bloomberg.com/news/articles/2012-12-18/nielsen-to-buy-research-firm-arbitron-for-48-a-share [https://perma.cc/B8EM-P92W].

165. Complaint, In re Nielsen Holdings N.V., and Arbitron Inc., No. C-4439 (F.T.C. Feb. 24, 2014), https://www.ftc.gov/system/files/documents/cases/140228nielsenholdingscmpt.pdf [https://perma.cc/H6CE-DGDQ].

166. Decision and Order, *supra* note 162.

167. *Id.*

168. COMSCORE, *supra* note 2, at 35.

169. *See* Complaint, *supra* note 165.

B. Google/ITA

The Google/ITA merger in 2011 is an example of a vertical data-related merger involving a non-price market that received insufficient scrutiny. The merger occurred between Google, primarily an internet search firm, and ITA Software, Inc. ("ITA"), a firm that provided algorithms to help travel sites (such as Expedia) find and book flights. The DOJ filed a complaint challenging the merger on April 8, 2011, based on the theory that Google might foreclose competitor travel sites from using ITA's algorithm after the merger.[170] The DOJ eventually approved the Google/ITA merger on the condition that Google agree to give competitor travel sites a license to use ITA's algorithms for five years, enact a firewall between its Google Flights and internet search teams, and continue to invest in improving ITA's travel booking algorithm.[171] But the DOJ's consent decree may have been insufficient to maintain competition in the market for travel search due to Google's dominance in the market for internet search.

Despite the DOJ's consent decree, Google may have foreclosed its competitors from the internet search market by giving its Google Flights widget more favorable search page placement, thereby favoring its own travel results over those of competitors. For example, when a user types "Flights to LAX" into the Google search bar, a Google Flights widget automatically appears that lists the price of flights from the user's location to LAX. Google also nudges its Gmail users toward using Google Flights by linking its users to Google Flights via information obtained from the user's Gmail account.[172] Google's preferential treatment of its own travel search results has created a barrier to entry for travel site competitors because these firms do not have control over dominant platforms for internet search or email. Consequently, according to analysts' estimates as of November 2016, Google's advertising revenue from Google Flights has been larger than all of its competitors combined.[173]

Notwithstanding the DOJ's failure to fully consider Google's exclusionary and preferential conduct, the potential for this type of conduct likely should have been a factor in the DOJ's decision to allow the Google/ITA merger, given

170. Complaint, United States v. Google Inc., No. 1:11-cv-00688, 2011 WL 1338047 (D.D.C. Apr. 8, 2011), https://www.justice.gov/atr/case-document/file/497686/download [https://perma.cc/GQ5V-G7M2].

171. Final Judgment, United States v. Google Inc., No. 1:11-cv-00688, 2011 WL 244481 (D.D.C. Oct. 5, 2011), https://www.justice.gov/atr/case-document/file/497636/download [https://perma.cc/36YA-5KLK].

172. Janko Roettgers, *Google Will Keep Reading Your Emails, Just Not for Ads*, VARIETY (June 23, 2017), http://variety.com/2017/digital/news/google-gmail-ads-emails-1202477321 [https://perma.cc/4UT5-NR7D].

173. Dennis Schaal, *Google's Travel Business Is Already Twice the Size of Expedia's*, SKIFT (Nov. 1, 2016), https://skift.com/2016/11/01/googles-travel-business-is-already-twice-the-size-of-expedias [https://perma.cc/AUN4-SEXP]; Dennis Schaal, *Google Flights Is Making Gains with Consumers*, SKIFT (Jan. 31, 2017), https://skift.com/2017/01/31/google-flights-is-making-gains-with-consumers [https://perma.cc/4HC4-WQ6Q].

Google's market power at the time of the merger.[174] In 2011, Google provided 65 percent of desktop internet searches.[175] Google's share of the desktop internet search market has remained approximately the same through 2017, dropping two percentage points to 63 percent of desktop internet search.[176] Further, once the DOJ's consent decree expired in 2016, Google was not required to renew licenses of competitor travel sites for ITA's travel search algorithm. Afterwards, Google could entirely foreclose its travel site competitors from access to ITA's travel booking algorithm or increase the cost of access above competitive levels. In fact, Google did begin limiting competitors' access to ITA's algorithm after the DOJ's consent decree expired in 2016.[177]

C. Facebook/Instagram

Facebook/Instagram was a horizontal merger because both firms competed in the market for social media services, but regulators may have mischaracterized the Facebook/Instagram merger as a non-horizontal merger by overlooking social media services as a relevant market. Antitrust regulators' review of this merger is illustrative of the low level of scrutiny that mergers involving valuable data in zero-price markets receive.

Facebook announced its deal to buy Instagram for one billion dollars in April 2012. At that time, Facebook accounted for 83 percent of all time spent on social media,[178] and Instagram was a fast-growing startup that had gained thirty million users since its launch in 2010.[179] The FTC approved the acquisition without comment. The basis for the FTC's approval seems to have been that it viewed the relevant market as internet advertising, rather than social media services. It is also possible that the agency viewed Twitter as a sufficient competitor to Facebook,[180] though Twitter views itself as a news distribution network rather than a social media service.[181] The FTC's reasoning can only be inferred because an analysis of the transaction was not published.

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174. STUCKE & GRUNES, *supra* note 12, at 127–40.

175. *Market Share of Search Engines*, *supra* note 139.

176. *Id.*

177. Timothy J. Seppala, *Google is Changing How Other Sites Use Its Flight Data*, ENGADGET (Nov. 1, 2017), https://www.engadget.com/2017/11/01/google-flight-data-api-shutdown [https://perma.cc/PD6P-PBBD].

178. COMSCORE, THE RISE OF BIG DATA ON THE INTERNET 25–26. (Jan. 25, 2013), https://www.comscore.com/Insights/Presentations-and-Whitepapers/2013/The-Rise-of-Big-Data-on-the-Internet [https://perma.cc/AB4G-V2VZ].

179. Matt Burns, *Instagram's User Count Now at 40 Million, Saw 10 Million New Users in Last 10 Days*, TECHCRUNCH (Apr. 13, 2012), https://techcrunch.com/2012/04/13/instagrams-user-count-now-at-40-million-saw-10-million-new-users-in-last-10-days [https://perma.cc/BJ3W-Q6HY].

180. *Number of Monthly Active Twitter Users Worldwide from 1st Quarter 2010 to 2nd Quarter 2018 (in Millions)*, STATISTA (July 2018), https://www.statista.com/statistics/282087/number-of-monthly-active-twitter-users [https://perma.cc/YKT2-FCNM] (reporting that Twitter had approximately 150 million monthly active users in 2012).

181. Since 2010, Twitter has described its main purpose as news distribution rather than social networking. *See* Harry McCracken, *Jack Dorsey on the New Twitter: "We're Not a Social Network as*

British antitrust regulators also approved the Facebook/Instagram merger but, unlike their American counterpart, provided analysis for their decision to approve the merger. However, the British agency's analysis of the transaction was "riddled with errors and absurdities."[182] For example, the British agency presumed that Facebook and Instagram were not competitors in social media services because Facebook did not feature a photo taking app and, at the time of the merger, Instagram's service did not include advertisements.[183] This analysis omitted the possibility that Instagram might emerge as a potential competitor to Facebook in the market for social media advertising. And indeed, in 2015, Instagram did add advertisements to its social media service.[184] Instagram's revenue from mobile advertisements is projected to grow to 6.8 billion dollars in 2018, which will be 18 percent of Facebook's projected total mobile advertising revenue.[185]

If the Facebook/Instagram merger had been blocked, then the two firms would now likely be the largest competitors in the market for providing social media services in the United States.[186] This can be inferred by looking at Facebook and Instagram's current market share in providing social media services to adults aged 18–34. For this age group, Facebook and Instagram have the highest user penetration of any social media service, at nearly 100 percent and 80 percent, respectively.[187] Facebook and Instagram users in the 18–34 age group spend nearly 1400 total minutes per month on the services on average, with 400 minutes and 1000 minutes spent on Instagram and Facebook, respectively. On average, these users spend less than 500 total minutes on any competitor services.[188] For comparison, Snapchat—Facebook's largest

People Think About It", FAST COMPANY (Sept. 13, 2016), https://www.fastcompany.com/3063296/jack-dorsey-on-the-new-twitter-were-not-a-social-network-as-people-th [https://perma.cc/4VAJ-QKTC]; Sarah Perez, *Twitter is Not a Social Network, Says Twitter Exec*, READWRITE (Sept. 14, 2010), https://readwrite.com/2010/09/14/twitter_is_not_a_social_network_says_twitter_exec [https://perma.cc/E75H-2VXK].

182. Wu, *supra* note 15, at 5.

183. *See* OFF. OF FAIR TRADING, ANTICIPATED ACQUISITION BY FACEBOOK INC. OF INSTAGRAM INC., ME/5525/12 (Aug. 14, 2012), http://webarchive.nationalarchives.gov.uk/20160815232112/https://assets.publishing.service.gov.uk/media/555de2e5ed915d7ae200003b/facebook.pdf [https://perma.cc/J665-8RUS].

184. Sapna Maheshwari, *More Ads to Appear on Instagram, Now on 'Stories' Feature*, N.Y. TIMES (Jan. 11, 2017), https://www.nytimes.com/2017/01/11/business/instagram-ads.html [https://perma.cc/323J-CX2K].

185. *Worldwide Mobile Internet Advertising Revenue of Instagram from 2015 to 2018 (in Billion U.S. Dollars)*, STATISTA (Nov. 2018), https://www.statista.com/statistics/448157/instagram-worldwide-mobile-internet-advertising-revenue [https://perma.cc/9HBA-C86N]; *Instagram's Net Mobile Advertising Revenue as Percentage of Facebook's Mobile Advertising Revenue from 2015 to 2018*, STATISTA, https://www.statista.com/statistics/448189/instagram-facebook-advertising-share [https://perma.cc/J5LK-3TPW].

186. Wu, *supra* note 15, at 5.

187. COMSCORE, *supra* note 2, at 33.

188. *Id.*

competitor for providing social media services to adults aged 18–34—has a penetration rate of 60 percent and an average of approximately 400 minutes per user spent on the service each month.[189] Facebook has even more power in the market for social media services for users aged over 35. Nearly 90 percent of adults over 35 have Facebook accounts, and these users spend almost 1000 minutes per month on the service on average.[190] Facebook has no substantial competition in the market for these users. No other social media service has engaged over 50 percent of users over 35 or reached more than 200 minutes per month from these users on average.[191]

Facebook uses its dominant position in the massive social media data market to raise barriers to entry for competitor social media services.[192] For example, in 2016 Facebook replaced Instagram's chronological news feed with its algorithmically determined "personalized" newsfeed.[193] Facebook relies on the data collected from Instagram and Facebook to develop its algorithms. Competitor social media services without access to a similarly large data flow are unlikely to be able to compete with Facebook in providing these services. For example, a competitor would need access to Facebook's training data or a substitute to develop a machine-learning algorithm to analyze the data as effectively as Facebook. Facebook uses its data to train machine-learning algorithms to optimize many aspects of the user experience, such as user security, targeted personal advertisements, and content creation.[194]

But Facebook does not provide these valuable services for free. Users must pay an economic price: their data and attention.[195] Facebook provides its social media services to users in exchange for user data and attention, and then sells users' data and attention to advertisers and other third parties for a profit. The economic value of Facebook's data is clear from its market capitalization. Facebook's value has increased from less than one billion dollars in 2006 to almost 450 billion dollars in 2017.[196] It is unclear how much Facebook's acquisition of Instagram has contributed to Facebook's increase in value over

189. *Id.*

190. *Id.*

191. *Id.*

192. Facebook also collects data from an extensive network of third parties through plug-in applications. GÜNEŞ ACAR, BRENDAN VAN ALSENOY, FRANK PIESSENS, CLAUDIA DIAZ & BART PRENEEL, FACEBOOK TRACKING THROUGH SOCIAL PLUG-INS 2 (Belgian Privacy Commission June 24, 2015) ("Facebook's Like Button, the most popular Facebook social plug-in, is present on 32% of the top 10.000 sites, covering almost all website categories including health and government websites.").

193. Isaac, *supra* note 104.

194. *See* Peter Dockrill, *Facebook Just Pushed Its Facial Recognition into a Creepy New Future*, SCIENCE ALERT (Dec. 20, 2017), https://sciencealert.com/facebook-just-pushed-its-facial-recognition-into-a-bold-new-future-tagged-privacy [https://perma.cc/37HP-8MDX].

195. Wu, *supra* note 15, at 5.

196. *Market Capitalization U.S. Tech and Internet Companies in 2006 and 2018 (in Billion U.S. Dollars)*, STATISTA (June 2018), https://www.statista.com/statistics/216657/market-capitalization-of-us-tech-and-internet-companies [https://perma.cc/P9BF-5EEH].

time,[197] but commentators have called Facebook's acquisition of Instagram the "best" acquisition in the history of Silicon Valley.[198] Yet, it is unclear to what extent the FTC considered the merger's potential to harm competition and consumer welfare in the social media services market. By acquiring Instagram, Facebook purchased a potent potential competitor and its valuable data. Though the merger may have provided efficiencies, it also likely led to several negative consequences: reductions in innovation, increases in third-party advertisement, and decreases in consumer privacy. If regulators had considered the acquisition's likely effects on the market for social media services, the potential harms to consumers and competition may have outweighed the merger's efficiency justifications. At the very least, Facebook's acquisition of Instagram deserved more scrutiny than a passing glance.

By comparing the review of the Nielsen/Arbitron acquisition with the review of the Google/ITA and Facebook/Instagram acquisitions, we can see that regulators are more likely to intervene to block data-related mergers between direct competitors in priced markets for data. For example, the DOJ required divestment in the Nielsen/Arbitron merger because the merger had the potential to affect the market for measurement data on cross-platform, television, and radio audiences. Audience measurement data had a price measured in dollar value, so the data necessary to develop the cross-platform audience measurement service could be defined and evaluated under the Merger Guidelines' analytical framework. Though the cross-platform audience measurement service was still in the process of being developed, the DOJ could infer the effects from the Nielsen/Arbitron merger by looking at the analogous markets for television and radio audience measurement. But in the case of mergers between firms with valuable data assets that have an undefined or zero market price, such as the personal data collected by Google and Facebook, regulators appear less likely to closely scrutinize these transactions or intervene to block mergers.

IV.
A REVISION OF THE NHMG TO UPDATE GUIDANCE ON MERGERS INVOLVING DATA ASSETS

The NHMG's lack of guidance on non-price harms, foreclosure, entrenchment, and price discrimination has contributed to inadequate scrutiny of

197. *See, e.g.*, Eric Jackson, *How Much Would Facebook Be Worth Today If It Hadn't Bought Instagram?*, FORBES (Apr. 30, 2017), https://www.forbes.com/sites/ericjackson/2017/04/30/how-much-would-facebook-be-worth-today-if-it-hadnt-bought-instagram/2/#7eede11e1dec [https://perma.cc/ZX2G-3BSG].

198. Kurt Wagner, *Here's Why Facebook's $1 Billion Instagram Acquisition Was Such a Great Deal*, RECODE (Apr. 9, 2017), https://www.recode.net/2017/4/9/15235940/facebook-instagram-acquisition-anniversary [https://perma.cc/XD6N-X345].

some data-related mergers.[199] A revision of the NHMG would provide a chance for the DOJ and FTC to clarify merger enforcement intentions regarding data-related mergers. By doing so, regulators could provide a much-needed framework for the analysis of data-related mergers that fall outside of the Guidelines' traditional analytical framework. Alternatively, regulators could release a set of guidelines specific to data-related mergers. Updated guidance would help courts assess the potential effects of non-horizontal and data-related mergers and help business stakeholders predict merger enforcement actions.

In drafting updated guidance, regulators should be careful not to over deter data-related mergers. Not all data has the potential to pose competitive harms to consumers. Many forms of data can be easily replicated so that multiple parties have access. Assets with this characteristic are "non-rivalrous" because multiple parties can use the asset without interfering with each other. Data is non-rivalrous if it is stored in a shareable format. And if many firms have access to data without limiting competitors, then the harms to consumers that foreclosure or entrenchment may pose are likely to dissipate.[200] For this reason, when evaluating data-related mergers, regulators should consider whether the merging parties exclusively control the data assets at issue.[201] Even if the parties do exclusively control data, that data may not pose a serious competitive concern if reasonable substitutes for the data are available to competitors.[202]

Yet, mergers that do involve parties with exclusive control over unique data assets may harm consumers and competition by increasing the merging parties' market power. To address these concerns, regulators should update the NHMG to provide a framework to analyze the effect of data-related mergers on non-price harms, foreclosure, entrenchment, and price discrimination.

A. Non-price Harms

Providing a framework for balancing a non-horizontal merger's potential effects on quality and innovation against other factors such as efficiency gains is important due to the growing importance and ubiquity of zero-price transactions. The five largest firms in the United States—Apple, Google, Microsoft, Facebook, and Amazon—all provide zero-price services as an integral part of their business strategies. Applying traditional analytical tools based on non-zero price measurements, such as the Herfindahl-Hirschman index or the SSNIP test, may overlook these zero-price transactions.

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199. *See* 1984 MERGER GUIDELINES, *supra* note 82. *See also supra*, Section I.B (noting that the 1982 NHMG include guidance only on potential competitive harms from elimination of specific potential competitors, increased barriers to entry, facilitation of collusion, and evasion of rate regulation).

200. Greg Sivinski, Alex Okuliar & Lars Kjolbye, *Is Big Data a Big Deal? A Competition Law Approach to Big Data*, 13 EUROPEAN COMPETITION J. 199, 199–227 (2017).

201. *Id.*

202. *Id.*

Despite the lack of analytical tools to analyze these transactions, zero-price transactions potentially have great economic and legal significance. A zero-dollar value price does not necessarily mean no price.[203] Even zero-price transactions fit under the broad scope of the Clayton Act if they involve activities from which firms anticipate economic gain.[204] In the attention economy, firms provide "free" services in exchange for consumers' time and attention. Similarly, firms that employ the surveillance business model provide "free" services to consumers in exchange for personal data and attention, then monetize that data by selling it to advertisers or other third parties. For example, in Q2 of 2018, Facebook earned on average $25.91 in advertising revenue per user in the US and Canada.[205] To offer services for a price of zero over the long term, a rational firm must intend to make a profit from its transactions in some manner.[206]

Regulators in the United States have fallen short in assessing the impact of data-related mergers on quality and innovation, especially in zero-price markets such as Internet search and social media services.[207] For example, regulators reviewing the Google/ITA merger did not seem to consider the potential that Google might foreclose or limit its competitors' access to consumers in the travel search market. Similarly, regulators reviewing the Facebook/Instagram merger did not consider that Facebook might decrease the quality of its services, for example, by increasing advertising to social media consumers relative to content or decreasing consumer privacy options. An update to the NHMG that explicitly includes non-price considerations, such as quality and innovation, would improve the predictability and reliability of merger enforcement actions and help courts determine how to weigh potential decreases in quality, consumer choice, and innovation against other factors such as efficiency gains.

B. Foreclosure

The NHMG do not include reference to the foreclosure theory of harm, despite the fact that the DOJ and FTC have included this theory in 75 percent of non-horizontal merger complaints filed from 1994 to 2015.[208] The omission of foreclosure from the NHMG creates ambiguity for business stakeholders and courts. For example, courts have little guidance on how agencies define foreclosure or whether the foreclosure theory of harm applies only to inputs or to customers as well. Due to this ambiguity, it is unclear whether regulators would challenge a merger between Comcast and Facebook that could foreclose

203. *See generally* Newman, *supra* note 159.

204. *See* AREEDA & HOVENKAMP, *supra* note 27, at ¶ 260b (2d ed. 2000); *see also* Agnew v. NCAA, 683 F.3d 328, 340 (7th Cir. 2012).

205. FACEBOOK, Q2 2018 FACEBOOK FORM 10-Q 26, https://investor.fb.com/financials/default.aspx [https://perma.cc/GXE8-7DUR] (measuring revenue from users of the Facebook application only).

206. Newman, *supra* note 159, at 154.

207. *Id.* at 190.

208. Salop & Culley, *Revising Vertical Merger Guidelines*, *supra* note 22.

Facebook users from internet service providers other than Comcast. Without a framework for analysis, many courts may not be able to rigorously evaluate such a complicated theory of harm.

Revision of the NHMG to specifically include a foreclosure theory is particularly important in light of the FCC's repeal of its net neutrality rules.[209] The FCC's net neutrality rules stood as a blanket ban on foreclosure in the telecommunications industry. Now that net neutrality rules have been repealed, online platforms, and other firms in other industries, will be free to foreclose content and inputs from their competitors. It will be important to have clear and predictable guidelines for the disputes that arise as a consequence. Due to the omission of the foreclosure theory of harm from the 1984 NHMG, some courts—like the district court in the AT&T/Time Warner merger trial—have been skeptical of foreclosure in general.[210] By revising the NHMG, regulators would have an opportunity to define the likely competitive harms from foreclosure, clarify enforcement intentions, and provide a framework for courts to analyze non-horizontal mergers that have the potential to induce foreclosure in a variety of industries.

C. Price Discrimination

An update of the 1984 NHMG might address how regulators analyze and weigh the potential for a merger to facilitate price discrimination. This issue is important because of the increasing use of behavior-based price discrimination (BBPD), where a firm alters the price offered to a consumer based on past behavior.[211] A data-related merger might facilitate BBPD by increasing the amount of behavioral consumer data available to a firm. Behavioral data and machine learning analysis may allow firms to accurately predict consumers' maximum willingness to pay and alter pricing accordingly via complex pricing algorithms. Because of the complexity of these algorithms, consumers may be unable to determine when they are being discriminated against.[212]

In the case of firms that collect large data sets on consumer behavior, the negative consumer welfare effects from BBPD could be significant. For example, in the case of a hypothetical merger between Facebook and Comcast, after the merger, Facebook/Comcast might use behavioral data from consumers' usage of social media services to measure how much each individual consumer values broadband internet, and to alter pricing of broadband internet for those consumers accordingly. For the 37 percent of consumers in the United States

209. *See* Keith Collins, *Net Neutrality Has Officially Been Repealed. Here's How That Could Affect You.*, N.Y. TIMES (June 11, 2018), https://www.nytimes.com/2018/06/11/technology/net-neutrality-repeal.html [https://perma.cc/F6YT-NZTV].

210. *See* United States v. AT&T Inc., 310 F. Supp. 3d 161, 192 n.18 (D.D.C. 2018) (quoting United States v. Anthem, Inc., 855 F.3d 345, 349 (D.C. Cir. 2017)).

211. *See* Useem, *supra* note 106.

212. *See generally* Dobkin, *supra* note 105.

with access to only one option for fast, fixed broadband internet, the price increases from this type of BBPD might be substantial.[213]

Regulators in the United States have often included theories of increased potential for price discrimination in merger enforcement complaints. But because of the NHMG's lack of guidance, it is unclear exactly how this issue is weighed in decisions to bring non-horizontal merger enforcement actions. Clarifying standards for analyzing BBPD from data-related mergers might be especially helpful if doing so establishes norms for acceptable behavior-based price discrimination.

D. Entrenchment

Finally, an update of the NHMG might look back to the merger enforcement practices of the 1960s to include an entrenchment theory of harm for mergers between firms with valuable and complementary data. Much like in *Procter*, where a dominant firm sought to entrench its position through merger with another dominant firm, a merger between two firms with exclusive access to unique data assets might entrench market power.[214] The entrenchment theory is particularly applicable to data-related mergers because data inputs are often both highly differentiated and complementary.[215] In industries with differentiated inputs, vertical integration increases the risk of foreclosure[216] and may raise barriers to entry by requiring potential competitors to enter multiple markets simultaneously.[217]

The economies of scale inherent to big data analysis can lead to high barriers to entry and increase the market power of incumbent firms across a wide range of industries.[218] For example, in 2010 Live Nation Entertainment, Inc. ("Live Nation") eliminated its most well-placed potential competitor in the market for selling concert tickets by merging with Ticketmaster Entertainment, Inc. ("Ticketmaster"). Live Nation uses the data it collects from concertgoers' purchase histories to create customized profiles to advertise future events. Potential competitors to Live Nation may not be able to compete in this aspect of service without access to an equivalent data estate.[219] Live Nation's exclusive access to this data set substantially increases barriers to entry in the market for concert ticket sales. Live Nation's acquisition of Ticketmaster entrenched its

213. *See* FED. COMMC'N COMM'N, *supra* note 5, at 6 fig.4 (2017) (reporting that 37 percent of households have access to only one residential fixed broadband services with at least 25 Mbps downstream and at least 3 Mbps upstream speeds).

214. *See* Halevy et al., *supra* note 130, at 9 ("[S]imple models and a lot of data trump more elaborate models based on less data.").

215. *See* Brynjolfsson & McAfee, *supra* note 6.

216. Salop, *supra* note 19, at 1967, 1981.

217. *Id*. at 1976.

218. *Id*. at 1989.

219. *See id*. at 1976.

dominant position, because of Ticketmaster's unique access to a similar and difficult to replicate consumer data set.

Entrenchment effects from data-related mergers are not limited to internet platforms or consumer-facing firms; indeed, automation related to existing machine learning and big data technology has the potential to displace work associated with 14.6 trillion dollars of wages globally.[220] Unique data and domain expertise are the most valuable assets many industrial firms own, and many companies are realizing this fact. For example, the General Electric Company ("General Electric") acquired Alstom, a power plant company, at least in part due to the perceived value of the firm's niche data.[221]

The Monsanto/Climate Corp. merger in 2013 is an example of a merger between an analytics firm and a firm with valuable data assets. Climate Corp. specialized in weather and crop yield analytics. The Monsanto Company ("Monsanto"), on the other hand, had collected unique sensor data on crop yield maximization and genetic seed modification. Monsanto requires farmers using its seed to sign a Technology Use Agreement and to install Monsanto sensors onto their fields and equipment. Monsanto then monitors everything from microclimate shifts to yield using these sensors, which are placed on a third of farms in America. This data is extremely lucrative for Monsanto because of its potential for research and analysis. Monsanto does not allow farmers access to the data it collects, or the resulting analytic insights.[222] David Friedberg, the cofounder of Climate Corp., recognized that Monsanto's valuable and exclusive research data would provide the merged firm with a dominant position in agricultural analytics that would be difficult for competitors to challenge.[223] Friedberg also recognized that Monsanto's position of dominance within the agricultural industry would be integral to its exploitation of the data, because data is "nearly worthless" without the scale and analytic capabilities to mine insights and take action based on those insights.[224]

The valuable data held by industrial firms like General Electric and Monsanto creates incentives for mergers between technology and industrial firms due to the potential for analysis of industrial data. Currently, industrial firms may not have procedures in place to analyze their data. But by

220. MCKINSEY & CO., THE AGE OF ANALYTICS: COMPETING IN A DATA-DRIVEN WORLD 15 (2016), https://www.mckinsey.com/~/media/McKinsey/Business Functions/McKinsey Analytics/Our Insights/The age of analytics Competing in a data driven world/MGI-The-Age-of-Analytics-Executive-summary.ashx [https://perma.cc/AP8R-FCWY].

221. GE Completes Acquisition of Alstom Power and Grid Business, GENERAL ELECTRIC (Nov. 2, 2015), https://www.gepower.com/about/alstom-acquisition [https://perma.cc/HFS8-C9MS] (noting potential efficiency benefit post-merger from combined "data and analytics").

222. *See* Isabelle M. Carbonell, *The Ethics of Big Data in Big Agriculture*, 5 INTERNET POL'Y REV. 1 (Mar. 31, 2016), https://policyreview.info/articles/analysis/ethics-big-data-big-agriculture [https://perma.cc/93ZC-AZ3E].

223. Quentin Hardy, *Why Big Ag Likes Big Data*, N.Y. TIMES (Oct. 2, 2013), https://bits.blogs.nytimes.com/2013/10/02/why-big-ag-likes-big-data [https://perma.cc/7JVJ-HYJF].

224. *Id.*

implementing processes to collect and analyze data, exclusive data collected during wide-scale industrial processes may be monetized. This will lead to more data related mergers based on the value of industrial data assets. For example, Tesla, Inc. ("Tesla") collects real-time sensor data from all its cars. If Tesla's data could be tied to mapping, this data could be used, for example, to map the location of every pothole on the road. For this reason, Tesla's data may be more valuable than the algorithms created by an analytic company like Waymo. A competitor's algorithms are likely to be less effective without access to big data sets.[225]

In the future, regulators should carefully analyze mergers involving exclusive data assets, whether in retail, technology services, or industrial industries, because these mergers have the potential to entrench dominant firms and create substantial barriers to entry.

E. Process Benefits to a Revision of the NHMG

There are also process benefits to establishing merger enforcement policy through rules and guidance, such as the NHMG, rather than through ad hoc adjudication.[226] In the course of drafting revised NHMG, regulators could consider the full range of evidence available, rather than simply the merits of an individual dispute. This would provide an opportunity to establish a "general code" of non-horizontal merger enforcement in the context of data-related mergers in zero-price markets.[227] During the process of establishing guidelines, all interested parties could weigh in with evidence, rather than simply parties to an isolated adjudication. The rulemaking process would result in a more effective resolution of issues surrounding data-related mergers, such as whether the switching costs and network effects associated with data assets warrant scrutiny by antitrust regulators. Revising the NHMG would also create more predictable and consistent policies around non-horizontal merger enforcement between the DOJ and the FTC.[228]

Finally, revising the NHMG would lower transaction costs for data-related mergers by providing advance notice of enforcement intentions to business stakeholders. Regulators would be held accountable to the standard expressed in the updated NHMG, which might alleviate concerns of ad hoc enforcement, such as those raised from the DOJ's challenge of the AT&T/Time Warner merger.[229]

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225. *See* Halevy et al., *supra* note 130, at 9 ("[S]imple models and a lot of data trump more elaborate models based on less data.").

226. *See* Richard J. Pierce Jr., *The Many Advantages of Rules and Rulemaking*, *in* KRISTIN E. HICKMAN & RICHARD J. PIERCE, JR., ADMINISTRATIVE LAW TREATISE §6.8 (5th ed., 2018 Cum. Supp. 2010).

227. *See id.*

228. *See* Salop & Culley, *Revising Vertical Merger Guidelines*, *supra* note 22208.

229. James B. Stewart, *With AT&T and Time Warner, Battle Lines Form for an Epic Antitrust Case*, N.Y. TIMES (Nov. 16, 2017), https://www.nytimes.com/2017/11/16/business/att-time-warner.html [https://perma.cc/U7FB-XPSB].

The cost of investigating and litigating merger challenges can be immense for both agencies and firms.[230] Accordingly, accurate agency guidance in this area of law is especially important.

CONCLUSION

The DOJ and FTC should revise the NHMG to include guidance on non-price harms, foreclosure, entrenchment, and price discrimination. This clarification is important because regulators are likely to mis-categorize or even completely overlook data-related mergers under the Merger Guidelines' current analytical paradigm. Alternatively, regulators could issue specific guidance for data-related mergers to address the unique competitive harms from complementary and exclusive data sets.

230. United States v. AT&T Inc., 310 F. Supp. 3d 161, 253 (D.D.C. 2018) (estimating the cost to both parties to litigate a non-horizontal merger challenge as "easily in the tens of millions of dollars").