

Essential Platforms

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ABSTRACT

Digital platforms are the railroads of the modern era. In the early twentieth century, a vast railroad network stretched from coast to coast, forming the backbone of commerce in the United States. Bridges and tunnels were essential to reach certain destinations and, sometimes, entire regions. Control over these bottlenecks in railroad networks enabled gatekeeping monopolists to exclude competitors from crucial markets. In response, the Supreme Court imposed a novel

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remedy by granting competitors access to this critical infrastructure under the Sherman Act—an approach known as the ‘essential facilities’ doctrine.

Today, digital platforms serve as essential facilities for the digital economy—a sector that is omnipresent in modern life. Google, Amazon, Facebook, Apple, and others control the bottlenecks of the internet and provide services to end-consumers through that infrastructure—in direct competition with independent businesses. Platforms leverage their exclusive control over search engines, e-commerce platforms, and app-stores to exclude rivals from markets for digital content, goods, and services thereby harming consumers and stifling innovation. A promising remedy is to grant competitors fair and equal access to these essential digital platforms. Yet the essential facilities doctrine has fallen prey to excessive judicial trust in self-correcting markets and the ensuing curtailment of antitrust enforcement.

It is high time to revive, renew, and expand the essential facilities doctrine in the digital economy. As with railroads, the doctrine can once again open markets while preserving network-based efficiencies. Economic insights into the optimal design of intellectual property rights provide valuable lessons for structuring an essential facilities doctrine for the digital age: creating and protecting monopolies, via exclusive rights or otherwise, can incentivize innovation. However, any monopoly must be limited in scope and duration to ensure competition. Building on these notions from IP, I suggest a two-tiered remedy: At its first level, regulators and courts must bar platforms from discriminating and self-preferencing. At its second level, after an appropriate amortization period, antitrust enforcers must upend platform-monopolies entirely, by forcing interoperability between platforms. Overall, this renewed version of a judicial doctrine from the early twentieth century will strengthen competition and spur innovation in the digital markets that have come to define modern commerce.

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INTRODUCTION

One hundred years ago, a vast network stretching from coast to coast formed the backbone of commerce in the United States—the railroads. Because trains frequently crossed rivers, valleys, and mountain passes, bridges and tunnels were essential to reach crucial markets and entire regions around the country. Control over these critical links in the railroad network enabled their gatekeepers to exclude competitors from crucial markets. In St. Louis, for example, the Terminal Railroad Association controlled all local railroad crossings of the Mississippi River: two bridges and a ferry line.¹ The Association became the gatekeeper for

¹ United States v. Terminal R.R Ass'n of St. Louis, 224 U.S. 383, 394 (1912).

train-based commerce in St. Louis, the “Gateway to the West.” As expected,² the Association abused its resulting market power. Independent competitors were not admitted to join the Association and “compelled either to desist from carrying on interstate commerce or to do so upon the terms imposed by the proprietary companies,” including arbitrary hauling charges.³ In response, the Supreme Court famously imposed a remedy granting competitors access to critical infrastructure based on the Sherman Act.⁴ The unanimous decision in *Terminal Railroad Association* laid out the approach that later became known as the ‘essential facilities’ doctrine.⁵

What the railroads were to the early twentieth century, digital platforms have become to the early twenty-first century.⁶ Both the railroads

² See Thurman Arnold, Assistant Att'y Gen. of the United States, Dep't of Just., The Antitrust Laws, Their Past and Future 11, Address Delivered over Station WJSV, Columbia Broadcasting System (Aug. 19, 1938) (transcript available at <https://perma.cc/S9S5-P79B>).

³ *Terminal R.R Ass'n*, 224 U.S. at 410.

⁴ *Id.* at 409–12.

⁵ Brett Frischmann & Spencer Weber Waller, *Revitalizing Essential Facilities*, 75 ANTITRUST L.J. 1, 6 (2008); Nikolas Guggenberger, *The Essential Facilities Doctrine in the Digital Economy: Dispelling Persistent Myths*, 23 YALE J.L. & TECH. (forthcoming 2021); Marina Lao, *Search, Essential Facilities, and the Antitrust Duty to Deal*, 11 NW. J. TECH. & INTELL. PROP. 275, 288 (2013); Robert Pitofsky et al., *The Essential Facilities Doctrine under U.S. Antitrust Law*, 70 ANTITRUST L.J. 443, 445 (2002); James R. Ratner, *Should There Be an Essential Facility Doctrine*, 21 U.C. DAVIS L. REV. 327, 327 (1988); David Reiffen & Andrew N. Kleit, *Terminal Railroad Revisited: Foreclosure of an Essential Facility or Simple Horizontal Monopoly?*, 33 J.L. & ECON. 419, 419 (1990); Zachary Abrahamson, *Comment, Essential Data*, 124 YALE L.J. 867, 869 (2014).

⁶ The comparison has been used, among others, by *Online Platforms and Market Power, Part 6: Examining the Dominance of Amazon, Apple, Facebook, and Google: Hearing Before the Subcomm. on Antitrust, Com., and Adm. L. of the H. Comm. on the Judiciary*, 116th Cong. (July 29, 2020) (statement of Jerrold Nadler, Chair, H. Comm. on the Judiciary); *Online Platforms and Market Power, Part 6: Examining the Dominance of Amazon, Apple, Facebook, and Google: Hearing Before the Subcomm. on Antitrust, Com., and Admin. L. of the H. Comm. on the Judiciary*, 116th Cong. (Aug. 5, 2020); Ramon Ramirez, *Elizabeth Warren Champions Michelob Ultra, Breaking up Amazon at SXSW*, DAILY DOT (Mar. 9, 2019), <https://perma.cc/F4NX-DK2F> (quoting Sen. Elizabeth Warren); see also Lina M. Khan, *The Separation of Platforms and Commerce*, 119 COLUM. L. REV. 973, 983–84 (2019). Amazon curiously fuels that comparison by urging a focus on its infrastructure. See Jay Carney, *Why Bernie Sanders Praised Amazon*, N.Y. TIMES (Feb. 10, 2020), <https://perma.cc/L64A-4S69>. For commentary skeptical about the aptitude of this analogy as it might be too narrow, see Frank Pasquale, *Dominant Search Engines: An Essential Cultural & Political Facility*, in THE NEXT DIGITAL DECADE 399, 402 (Berin Szoka & Adam Marcus eds., 2010).

and their digital descendants have generated unimaginable innovation and produced great wealth. Today, digital services penetrate virtually every aspect of modern life, and the digital economy contributes more than \$2 trillion to the annual GDP of the U.S.⁷ Google, Amazon, Apple, Facebook, and others have flourished in the open digital environment of the 1990s and early 2000s. Indeed, these platforms have contributed significantly to today's digital economy by constructing vast and efficient ecosystems for digital commerce. Access to their facilities is crucial for any independent business trying to survive in the digital economy.⁸ And, similarities between railroads and digital platforms have not escaped Congress.⁹ At the 2020 Congressional hearing "Examining the Dominance of Amazon, Apple, Facebook, and Google," House Judiciary Chairman Jerry Nadler drew the same parallel: "Railroads notoriously abused [their] gatekeeper power in a variety of ways. They charged tolls, exhorting the producers reliant on their rails. They discriminated amongst farmers, picking winners and losers across the economy.¹⁰ And by expanding into lines of business that competed directly with producers, they could use their dominance in transportation to favor their own services... Today, the digital economy poses similar challenges."¹¹

To maximize profits, digital platforms follow in the footsteps of the railroads and assume dual roles.¹² On the one hand, platforms create and

⁷ CHRISTOPHER HOOTON, INTERNET ASS'N, MEASURING THE U.S. INTERNET SECTOR: 2019 12 (Sept. 26, 2019). The Bureau of Economic Analysis estimates value created by the digital economy in 2017 at \$1.35 trillion (or \$1.48 trillion adjusted by inflation). See Kevin Barefoot et al., *Measuring the Digital Economy*, 99 J. U.S. BUREAU ECON. ANALYSIS 1, 6–7 (2019).

⁸ JULIE E. COHEN, BETWEEN TRUTH AND POWER: THE LEGAL CONSTRUCTIONS OF INFORMATIONAL CAPITALISM 39 (2019). ("And access to platforms— whether online marketplaces or search engines or payment systems or computing environments— is increasingly essential to reaching any customers at all.")

⁹ *Online Platforms and Market Power*, *supra* note 6 (statement of Jerrold Nadler, Chair, H. Comm. on the Judiciary); Ramirez, *supra* note 6; see also Khan, *supra* note 6, at 983–84.

¹⁰ Lina M. Khan, *Amazon's Antitrust Paradox*, 126 YALE L.J. 710, 797–98 (2017).

¹¹ *Online Platforms and Market Power*, *supra* note 6 (statement of Jerrold Nadler, Chair, H. Comm. on the Judiciary).

¹² SUBCOMM. ON ANTITRUST, COM. AND ADMIN. L. OF THE H. COMM. ON THE JUDICIARY,

curate markets, like Amazon Marketplace. They provide infrastructure¹³ and act as umpires, developing and enforcing governing norms by which platform users must abide.¹⁴ On the other hand, Amazon, Google, Apple, and Facebook also use their platforms to provide their own services to end-users—in direct competition with third-party vendors.¹⁵ As an example, Amazon sells products in its own name on Amazon Marketplace and competes with third-party sellers on the platform.¹⁶ Google and Apple both operate app stores that feature applications from countless independent developers as well as Google’s and Apple’s own applications, such as the G-Mail or Apple Music apps.

Platforms abuse their power by excluding and discriminating against third parties on their platforms.¹⁷ Amazon uses consumer and third-party merchant data to systematically copy products of independent vendors and prioritize its own products in search results on its site.¹⁸ Google and Apple app stores also give preference to their own applications in

116TH CONG., INVESTIGATION OF COMPETITION IN DIGITAL MARKETS: MAJORITY STAFF REPORT AND RECOMMENDATIONS 16, 40, 43, 70, 322 (Oct. 2020); Khan, *supra* note 6, at 984–99.

¹³ K. Sabeel Rahman, *The New Utilities: Private Power, Social Infrastructure, and the Revival of the Public Utility Concept*, 39 CARDOZO L. REV. 1621, 1669–75 (2018); K. Sabeel Rahman, *Regulating Informational Infrastructure: Internet Platforms as the New Public Utilities*, 2 GEO. L. TECH. REV. 234, 234 (2018). See Julie E. Cohen, *Law for the Platform Economy*, 51 U.C. DAVIS L. REV. 133, 143–45 (2017) (distinguishing platforms, networks, and infrastructure).

¹⁴ Thomas E. Kadri, *Digital Gatekeepers*, 99 TEX. L. REV. 951 *passim* (2021); Khan, *supra* note 6, at 984, 1065; Rory Van Loo, *Federal Rules of Platform Procedure*, 88 U. CHI. L. REV. (forthcoming 2021); Rory Van Loo, *The New Gatekeepers: Private Firms as Public Enforcers*, 106 VA. L. REV. 467, 474–80 (2020).

¹⁵ Khan, *supra* note 6, at 984.

¹⁶ SUBCOMM. ON ANTITRUST, COM. AND ADMIN. L. OF THE H. COMM. ON THE JUDICIARY, 116TH CONG., *supra* note 12, at 16, 322.

¹⁷ COMPETITION & MKTS. AUTH., ONLINE PLATFORMS AND DIGITAL ADVERTISING: MARKET STUDY FINAL REPORT 109–14 (2020); Adrienne Jeffries & Leon Yin, *Google’s Top Search Result? Surprise! It’s Google*, MARKUP (last updated July 28, 2020, 6:22 PM ET), <https://perma.cc/D3UU-25WX>; FIONA M. SCOTT MORTON & DAVID C. DINIELLI, OMIDYAR NETWORK, ROADMAP FOR A MONOPOLIZATION CASE AGAINST GOOGLE REGARDING THE SEARCH MARKET 31–36 (June 2020).

¹⁸ Dana Mattioli, *Amazon Scooped Up Data from Its Own Sellers to Launch Competing Products*, WALL ST. J. (last updated Apr. 23, 2020, 9:51 PM ET), <https://perma.cc/X8BS-CT9E>; Stacey Mitchell & Shaoul Sussman, *How Amazon Rigs Its Shopping Algorithm*, PROMARKET (Nov. 6, 2019), <https://perma.cc/8KK5-8QRM>.

search listings and drive customers away from independent developers.¹⁹ In August 2020, both app stores delisted the popular online game Fortnite because its developer, Epic Games, added a feature that enabled direct payments to Epic for in-app purchases, instead of channeling the payments through the app stores.²⁰ In fact, these discriminatory and exclusionary practices are systemic. The mountains of documents gathered by an ongoing House investigation provide ample firsthand accounts of Big Tech's predatory behavior from countless internal emails and papers.²¹

The persistent dominance of the market by a few platforms results from extreme network effects: The more merchants, app developers, or content providers a platform hosts (on one side of the market), the more attractive it becomes to consumers (on the other side of the market) and vice versa.²² Empirically, the number of users on one side almost exponentially increases the value of the network to the users on the other side—up to a certain level.²³ This effect creates a chicken-and-egg problem for nascent competitors:²⁴ they cannot attract consumers because they lack vendors and cannot attract vendors because they lack consumers.²⁵ The resulting enormous barriers to entry for nascent competitors isolates incumbent platforms from competitive forces that normally

¹⁹ Tripp Mickle, *Apple Dominates App Store Search Results, Thwarting Competitors*, WALL ST. J. (July 23, 2019, 11:53 AM ET), <https://perma.cc/7SP6-AV9Q>; Jack Nicas & Keith Collins, *How Apple's Apps Topped Rivals in the App Store It Controls*, N.Y. TIMES (Sept. 9, 2019), <https://perma.cc/K6DH-UCCS>.

²⁰ Complaint, Epic Games, Inc. v Apple, Inc., No. 4:20-cv-05640 (N.D. Cal. Aug. 13, 2020); Complaint, Epic, Inc. v. Google, No. 3:20-cv-05671, (N.D. Cal. Aug. 13, 2020); Dieter Bohn, *Fortnite for Android Has Also Been Kicked off the Google Play Store*, VERGE (Aug. 13, 2020, 6:41 PM EDT), <https://perma.cc/V53F-BLMK>; Andrew Webster, *Epic Offers New Direct Payment in Fortnite on IOS and Android to Get around App Store Fees*, VERGE (Aug. 13, 2020), <https://perma.cc/QMQ9-DDKU>.

²¹ *Online Platforms and Market Power*, *supra* note 6 (repository of subpoenaed documents at <https://perma.cc/7XJJ-52C7>); see also Tim Wu, *What Years of Emails and Texts Reveal About Your Friendly Tech Companies*, N.Y. TIMES (Aug. 4, 2020), <https://perma.cc/5VFY-PCUA>.

²² Mark Armstrong, *Competition in Two-Sided Markets*, 37 RAND J. ECON. 668, 668–70 (2006).

²³ CARL SHAPIRO & HAL R. VARIAN, INFORMATION RULES: A STRATEGIC GUIDE TO THE NETWORK ECONOMY 184 (1999).

²⁴ See C. Scott Hemphill & Tim Wu, *Nascent Competitors*, 168 U. PA. L. REV. 1879 (2020).

²⁵ SHAPIRO & VARIAN, *supra* note 23, at 184.

constrain market power. Freed from such restraints, incumbent platforms can engage in exclusionary behavior in the market for goods and services offered on the platform.

Thurman Arnold, the head of the Department of Justice's Antitrust Division under FDR, memorably characterized monopolists as "a sort of toll bridge over which everyone has to pass."²⁶ He points out that "economic toll bridges have been familiar features of American life since Ida Tarbell wrote the history of the Rockefeller dynasty."²⁷ Mimicking the railroads, digital platforms grew in an era of unregulated expansion into unmarked territory—as gateways into cyberspace instead of the American West. The "economic toll bridges" for commerce, as Arnold described the monopolists, "levy what are in effect taxes."²⁸ Apple and Google, for example, charge fees of up to 30% for in-app purchases over their app store platforms²⁹—presumably exceeding competitive levels.³⁰ The app developers depend on these ecosystems; they have little choice but to swallow the bitter pill. In short, the platforms' chokehold on the digital economy suffocates competition, forecloses markets, stifles innovation, and, ultimately, harms consumers.³¹

²⁶ Thurman Arnold, *An Inquiry into the Monopoly Issue*, N.Y. TIMES, Aug. 21, 1938, at 1. Arnold expands on the metaphor of toll bridges for commerce in his seminal 1940 book on "The Bottlenecks of Business." See THURMAN ARNOLD, THE BOTTLENECKS OF BUSINESS 58, 127, 179, 211, 219, 224, 272 (Reynal & Hitchcock 1940).

²⁷ Arnold, *An Inquiry into the Monopoly Issue*, *supra* note 26, at 1. Arnold refers to the seminal book, IDA M. TARBELL, THE HISTORY OF THE STANDARD OIL COMPANY (McClure, Phillips & Co. 1904).

²⁸ Arnold, *An Inquiry into the Monopoly Issue*, *supra* note 26. See *Online Platforms and Market Power*, *supra* note 6.

²⁹ JONATHAN BORCK ET AL., ANALYSIS GRP., APPLE'S APP STORE AND OTHER DIGITAL MARKETPLACES: A COMPARISON OF COMMISSION RATES (2020); Google Support, Service Fees, PLAY CONSOLE HELP (2018), <https://perma.cc/6Z4R-9ZQB>.

³⁰ Order at 6, Epic Games, Inc. v. Apple, Inc., No. 4:20-cv-05640-YGR (N.D. Cal. Aug. 24, 2020), ECF No. 48 ("While the Court anticipates experts will opine that Apple's 30 percent take is anti-competitive, the Court doubts that an expert would suggest a zero percent alternative."); Damien Geradin & Dimitrios Katsifis, *The Antitrust Case Against the Apple App Store*, J. COMPETITION L. & ECON. (forthcoming 2021).

³¹ See Complaint at 5, United States v. Google, LLC, No. 1:20-cv-03010-APM (D.D.C. Oct. 20, 2020).

A promising remedy, then and today, is to grant competitors equal and fair access to essential infrastructure for commerce.³² In 1912, for the Supreme Court, this meant forcing a terminal railroad association in St. Louis to admit its competitors and grant them fair access to bottleneck crossings over the Mississippi River. Today, this would require enjoining Amazon, Google, Apple, and Facebook to grant third-party sellers, app developers, and content providers access to their platforms on fair terms.³³ This approach would level the playing field in the digital economy and spur innovation.

Yet, the essential facilities doctrine did not make it from St. Louis to Silicon Valley. It fell prey to an excessive judicial trust in self-correcting markets, misguided “techtopia,” as Rebecca Haw Allensworth frames it, and the ensuing curtailment of antitrust enforcement.³⁴ Following decades of anti-enforcement commentary from academics, policymakers, and industry groups,³⁵ the courts clipped the doctrine’s wings beginning in the late 1980s and throughout the 1990s.³⁶ Reflecting the laissez-faire zeitgeist, the Supreme Court all but formally disowned the idea of curbing gatekeeper power by imposing access rights and fair dealing requirements in *Trinko*.³⁷ The Court brought the essential facilities doctrine to a halt. While essential facilities claims have not been considered promising lately,³⁸ the tide might be about to turn—especially with Congress’s

³² SUBCOMM. ON ANTITRUST, COM. AND ADMIN. L. OF THE H. COMM. ON THE JUDICIARY, 116TH CONG., *supra* note 12, at 382–83, 397–98.

³³ *Id.*

³⁴ Rebecca Haw Allensworth, *Antitrust’s High-Tech Exceptionalism*, 130 YALE L.J. 588, 593–601 (2021).

³⁵ See Phillip Areeda, *Essential Facilities: An Epithet in Need of Limiting Principles*, 58 ANTITRUST L.J. 841 (1989); Phillip Areeda, *Monopolization, Mergers, and Markets: A Century Past and the Future*, 75 CAL. L. REV. 959, 965 (1987). See also William E. Kovacic, *The Chicago Obsession in the Interpretation of US Antitrust History*, 87 U. CHI. L. REV. 459, 485 n.122 (2020); William E. Kovacic, *The Intellectual DNA of Modern U.S. Competition Law for Dominant Firm Conduct: The Chicago/Harvard Double Helix*, 2007 COLUM. BUS. L. REV. 1, 64–71 (2007).

³⁶ See *Illinois ex rel. Burris v. Panhandle E. Pipe Line Co.*, 935 F.2d 1469 (7th Cir. 1991); *Alaska Airlines v. United Airlines*, 948 F.2d 536 (9th Cir. 1991).

³⁷ *Verizon Commc’ns Inc. v. Law Offices of Curtis V. Trinko, LLP*, 540 U.S. 398, 410–11 (2004); Frischmann & Waller, *supra* note 5, at 9.

³⁸ Khan, *supra* note 6, at 1027–33.

newfound interest in opening digital markets and various State-level initiatives.³⁹

It is high time to revive, renew, and expand the essential facilities doctrine to address apparent market foreclosures in the digital economy.⁴⁰ As with toll bridges, re-establishing competition as a process to define access conditions via horizontal break-ups might not suffice to guarantee open markets in the medium to longer term. In fact, markets might quickly re-consolidate and tip again, as a consequence of the same forces for concentration that were at work in the first place, such as extreme network effects data-based economies of scale.⁴¹ This is where the essential facilities doctrine may prove especially valuable and once again open up markets. The doctrine's proven and tested approach has the potential to generate balanced and sustainable incentives for innovation and efficient allocation in markets for and on platforms. That said, reviving the essential facilities doctrine is not just an economic necessity. The enormous power of monopolies "may sometimes be exercised benevolently, but, nevertheless, it is a dictatorial power subject to no public responsibility, which is the antithesis of our democratic tradition."⁴² Arnold's lines, penned almost 80 years ago, could not ring truer today. A staggering 77% of Americans believe that Big Tech, mainly consisting of digital platforms, holds too much power, and 59% see these companies as causing competitive problems in the sense that "[t]hey make it more difficult for new technology companies to compete."⁴³

³⁹ See SUBCOMM. ON ANTITRUST, COM. AND ADMIN. L. OF THE H. COMM. ON THE JUDICIARY, 116TH CONG., *supra* note 12; Guggenberger, *supra* note 5.

⁴⁰ See SUBCOMM. ON ANTITRUST, COM. AND ADMIN. L. OF THE H. COMM. ON THE JUDICIARY, 116TH CONG., *supra* note 12, at 397–98.

⁴¹ FRANCIS FUKUYAMA ET AL., REPORT OF THE WORKING GROUP ON PLATFORM SCALE 20–21 (2020).

⁴² Arnold, *An Inquiry into the Monopoly Issue*, *supra* note 26.

⁴³ KNIGHT FOUND., TECHLASH? AMERICA'S GROWING CONCERN WITH MAJOR TECHNOLOGY COMPANIES 13–14 (Mar. 11, 2020).

Like the Supreme Court of 1912, we face fundamental questions about the concentration of private power and its limits⁴⁴ when dealing with digital platforms. To what extent should we enable monopolization of markets? When and why should we allow private owners of essential infrastructure to foreclose commerce and extract monopoly rents? When is a private entity obliged to grant others access to its facilities according to fair terms and conditions? How do we create an environment in which innovation thrives? In this Article, I will lay out the case for a revival, renewal, and expansion of the essential facilities doctrine. The argument combines modern economic analysis of multi-sided platforms with systemic questions of power over commerce and its distribution in the political economy.⁴⁵ Methodologically, it draws from industrial

⁴⁴ See generally THOMAS PHILIPPON, THE GREAT REVERSAL: HOW AMERICA GAVE UP ON FREE MARKETS (2019); Matias Covarrubias et al., *From Good to Bad Concentration? US Industries over the Past 30 Years*, (Nat'l Bureau of Econ. Rsch., Working Paper No. 25983, 2019); Jason Furman & Peter Orszag, *A Firm-Level Perspective on the Role of Rents in the Rise of Inequality*, in TOWARD A JUST SOCIETY: JOSEPH STIGLITZ AND TWENTY-FIRST CENTURY ECONOMICS 19, 33–38 (Martin Guzman ed., 2018); Germán Gutiérrez & Thomas Philippon, *Declining Competition and Investment in the U.S.*, (Nat'l Bureau of Econ. Rsch., Working Paper No. 23583, 2017); Marshall Steinbaum & Maurice E Stucke, *The Effective Competition Standard: A New Standard for Antitrust*, 87 U. CHI. L. REV. 595, 595, 601 (2020).

⁴⁵ See COHEN, *supra* note 8, at 3–5, 39, 41, 170–201; Jedediah Britton-Purdy et al., *Building a Law-and-Political-Economy Framework: Beyond the Twentieth-Century Synthesis*, 129 YALE L.J. 1784, 1818–23.

organization,⁴⁶ intellectual property and innovation economics,⁴⁷ and (doctrinal) antitrust analysis.⁴⁸

Specifically, this Article calls for an essential facilities doctrine that would grant merchants, content creators, and app developers access rights to platforms where the market does not provide for reasonable alternatives. By rebalancing incentives for dynamic innovation and allocation, this approach will contribute to a more sustainable digital economy. As such, the argument addresses several pressing concerns: levels of concentration in the economy and markups of companies rise,⁴⁹ consumer

⁴⁶ Daniel A. Ackerberg & Gautam Gowrisankaran, *Quantifying Equilibrium Network Externalities in the ACH Banking Industry*, 37 RAND J. ECON. 738 (2006); Armstrong, *supra* note 22; Jean-Pierre H. Dubé et al., *Tipping and Concentration in Markets with Indirect Network Effects*, 29 MKTG. SCI. 216 (2010); Neil Gandal et al., *The Dynamics of Technological Adoption in Hardware/Software Systems: The Case of Compact Disc Players*, 31 RAND J. ECON. 43 (2000); Ariel Katz, *Copyright and Competition Policy*, in *HANDBOOK ON THE DIGITAL CREATIVE ECONOMY* 209 (Ruthe Towse & Christian Handke eds., 2013); Michael L. Katz & Carl Shapiro, *Systems Competition and Network Effects*, 8 J. ECON. PERSP. 93 (May 1994); Michael L. Katz & Carl Shapiro, *Network Externalities, Competition, and Compatibility*, 75 AM. ECON. REV. 424 (1985); Harikesh Nair et al., *Empirical Analysis of Indirect Network Effects in the Market for Personal Digital Assistants*, 2 QUANTITATIVE MKTG. & ECON. 23 (2004); Jean-Charles Rochet & Jean Tirole, *Platform Competition in Two-Sided Markets*, 1 J. EUR. ECON. ASS'N 990 (2003); Marc Rysman, *The Economics of Two-Sided Markets*, 23 J. ECON. PERSP. 125 (2009); Ulrich Witt, “Lock-in” vs. “Critical Masses” — *Industrial Change under Network Externalities*, 15 INT'L J. INDUS. ORG. 753 (1997).

⁴⁷ Chien-Fu Chou & Oz Shy, *New Product Development and the Optimal Duration of Patents*, 57 S. ECON. J. 811 (1991); Richard Gilbert & Carl Shapiro, *Optimal Patent Length and Breadth*, 21 RAND J. ECON. 106 (1990); WILLIAM D NORDHAUS, *INVENTION, GROWTH, AND WELFARE: A THEORETICAL TREATMENT OF TECHNOLOGICAL CHANGE* (M.I.T. Press 1969); Philip J. Weiser, *The Internet, Innovation, and Intellectual Property Policy*, 103 COLUM. L. REV. 534 (2003).

⁴⁸ JONATHAN B. BAKER, *THE ANTITRUST PARADIGM: RESTORING A COMPETITIVE ECONOMY* (2019); ROBERT H. BORK, *THE ANTITRUST PARADOX: A POLICY AT WAR WITH ITSELF* (1978); BARBARA VAN SCHEWICK, *INTERNET ARCHITECTURE AND INNOVATION* (2010); Abrahamson, *supra* note 5; Areeda, *Essential Facilities: An Epithet in Need of Limiting Principles*, *supra* note 35; Jonathan B. Baker & Fiona Scott Morton, *Antitrust Enforcement Against Platforms MFNs*, 127 YALE L.J. 2176 (2018); Frischmann & Waller, *supra* note 5; Hemphill & Wu, *supra* note 24; Khan, *supra* note 6; Khan, *supra* note 10; Abbott B. Lipsky & Gregory J. Sidak, *Essential Facilities*, 51 STAN. L. REV. 1187 (1999); Dina Srimivasan, *The Antitrust Case Against Facebook: A Monopolist’s Journey Towards Pervasive Surveillance in Spite of Consumers’ Preference for Privacy*, 16 BERKELEY BUS. L.J. 39 (2019); Barbara van Schewick, *Network Neutrality and Quality of Service: What a Nondiscrimination Rule Should Look Like*, 67 STAN. L. REV. 1 (2015); Spencer Weber Waller, Areeda, *Epithets, and Essential Facilities*, 2008 WIS. L. REV. 359 (2008).

⁴⁹ See Steven Berry et al., *Do Increasing Markups Matter? Lessons from Empirical Industrial Organization*, 33 J. ECON. PERSP. 44 (2019).

prices in the United States exceed those in comparable economies,⁵⁰ and choice has been declining both for consumers and commercial customers. The article situates the essential facilities doctrine as a crucial element of a comprehensive toolkit for ensuring competition and innovation in digital markets. The doctrine is a necessary complement to other approaches, such as horizontal break-ups,⁵¹ vertical separation (i.e., separating platforms and commerce),⁵² (regulatory) interoperability requirements,⁵³ non-discrimination rules,⁵⁴ public utility frameworks or digital public infrastructure,⁵⁵ data sharing and information disclosure mandates,⁵⁶ and reforms to the tax code,⁵⁷ to name the most prominent proposals. After all, none of these proposals manage to address all challenges posed by digital platforms—especially where, everything else equal, network

⁵⁰ PHILIPPON, *supra* note 44.

⁵¹ Rory Van Loo, *In Defense of Breakups: Administering a “Radical” Remedy*, 105 CORNELL L. REV. 1955 (2020); ZEPHYR TEACHOUT, *BREAK’EM UP: RECOVERING OUR FREEDOM FROM BIG AG, BIG TECH, AND BIG MONEY* (2020).

⁵² Khan, *supra* note 6; Elizabeth Warren, *Here’s How We Can Break up Big Tech*, TEAM WARREN (Mar. 8, 2019), <https://perma.cc/7Y56-HVBC>.

⁵³ SUBCOMM. ON ANTITRUST, COM. AND ADMIN. L. OF THE H. COMM. ON THE JUDICIARY, 116TH CONG., *supra* note 12, at 384–86; COMPETITION & MARKETS AUTHORITY, *supra* note 17, at 370–74; Kadri, *supra* note 14; Przemysław Palka, *The World of Fifty (Interoperable) Facebooks*, 51 SETON HALL L. REV. (forthcoming 2021).

⁵⁴ SUBCOMM. ON ANTITRUST, COM. AND ADMIN. L. OF THE H. COMM. ON THE JUDICIARY, 116TH CONG., *supra* note 12, at 382–83; see also van Schewick, *supra* note 48.

⁵⁵ See Rahman, *The New Utilities: Private Power, Social Infrastructure, and the Revival of the Public Utility Concept*, *supra* note 13; Rahman, *Regulating Informational Infrastructure: Internet Platforms as the New Public Utilities*, *supra* note 13; Ethan Zuckerman, *The Case for Digital Public Infrastructure*, KNIGHT FIRST AMENDMENT INST. (Jan. 17, 2020), <https://perma.cc/R7HT-9NLF>.

⁵⁶ CLAUDIA BIANCOTTI & PAOLO CIOCCA, *OPENING INTERNET MONOPOLIES TO COMPETITION WITH DATA SHARING MANDATES* (Peterson Inst. for Int’l Econ. 2019); Oscar Bor-gogno & Giuseppe Colangelo, *The Data Sharing Paradox: BigTechs in Finance*, 16 EUR. COMP. J. 492 (2020); Vikas Kathuria & Jure Globocnik, *Exclusionary Conduct in Data-Driven Markets: Limitations of Data Sharing Remedy*, 8 J. ANTITRUST ENFORCEMENT 511 (2020); Rory Van Loo, *Helping Buyers Beware: The Need for Supervision of Big Retail*, 163 U. PA. L. REV. 1311, 1386–92 (2015); Rory Van Loo, *Digital Market Perfection*, 117 MICH. L. REV. 815, 873 (2019).

⁵⁷ Paul Romer, *A Tax That Could Fix Big Tech*, N.Y. TIMES (May 6, 2019), <https://perma.cc/GV9U-MQJG>.

effects would likely drive rapid organic reconsolidation and allow for monopoly rent extraction from digital commerce.⁵⁸

In the Article, I present two novel and cogent foundations for upending platform monopolies and embracing the essential facilities doctrine. First, economic insights into the optimal design of intellectual property rights provide valuable lessons for structuring an essential facilities doctrine for the digital age: creating and protecting monopolies, in the form of exclusive rights or otherwise, can incentivize innovation. However, any monopoly must be limited in scope and duration to ensure competition and progress. Building on these notions from intellectual property law, I suggest a two-tiered remedy for digital bottlenecks: At its first level, regulators and courts must bar discrimination and self-preferencing by platforms. At its second level, after an appropriate amortization period, beginning with the tipping of the market,⁵⁹ antitrust enforcers must upend platform-monopolies entirely. This requires a combination of tools. Platforms must allow other platforms to link their services via access points, enabling interoperability between platforms. Agencies and courts must limit prices and conditions to appropriate levels of return, preventing platforms from extracting monopoly rents.

Second, the Article uncovers the true potential of a renewed version of the essential facilities doctrine applied to digital platforms. Policy tools to strengthen competition do not face the same constraints when applied to digital platforms as they did to their physical ancestors. Namely, the creation of digital platforms does not necessarily require large infrastructural investments. This reality situates digital platforms between intellectual property and physical infrastructure. In IP law, it is sufficient to end property rights and set the knowledge free. Classical physical

⁵⁸ Borgogno & Colangelo, *supra* note 56; Mark A. Lemley & Andrew McCreary, *Silicon Valley Needs to Build Out, Not Cash Out*, FORTUNE (Mar. 9, 2020), <https://perma.cc/55XC-KUJ4>. (Tighter merger rules “won’t alone fix the problem of today’s entrenched tech monopolies. But they will allow the next generation of companies that might displace the tech giants to make it to market.”)

⁵⁹ See Dubé et al., *supra* note 46, at 240; Michael L Katz & Shapiro, *supra* note 46, at 105–06. (Tipping “is the tendency of one system to pull away from its rivals in popularity once it has gained an initial edge.”)

infrastructure remains constrained by its surroundings. For the railroads in St. Louis, that was the Mississippi River.⁶⁰ While digital platforms cannot simply be “set free,” parallel digital structures are not limited by rivers or hills, nor do they waste scarce physical space. In effect, the essential facilities doctrine should only be constrained by considerations of appropriate incentives for innovation. Over time, additional network effects become windfall profits—new customers do not join because of the quality of the product but because of the size of the network. At that point, network effects no longer adequately reward innovation, but only form barriers to entry that foreclose markets. And where the network effects outweigh the impact of other product-level innovation, even worse quality incumbents prevail over nascent competition. The interoperability requirement at the second level of the proposed new essential facilities doctrine accounts for that distinction. It separates true innovation from windfall network effects as it allows competitors to participate in the value created by the network.

The article rests on the understanding that we constantly decide on the level of monopolization in the economy, including through regulation, property rights, contract law, coordination rights,⁶¹ and antitrust enforcement. Overall, the Article provides a vision for a participatory digital economy that affords today’s entrepreneurs the competitive environment in which Amazon, Google, Apple, Facebook, and others thrived. As House Judiciary Member Jayapal, who represents Seattle, the home of Amazon, noted: “[T]he whole goal . . . is to make sure that there are more Amazons, that there are more Apples, that there are more companies that get to innovate and small businesses that get to thrive.”⁶²

The article proceeds as follows. Part I showcases the dependence of independent businesses on digital platforms and abuses of this position by the new toll bridges for commerce. This Part also explains the origins

⁶⁰ United States v. Terminal R.R. Ass’n of St. Louis, 224 U.S. 383, 396 (1912).

⁶¹ Sanjukta Paul, *Antitrust as Allocator of Coordination Rights*, 67 UCLA L. REV. 378, 401–09 (2020).

⁶² *Online Platforms and Market Power*, *supra* note 6 (statement of Pramila Jayapal, Member, H. Comm. on the Judiciary).

of platforms' monopoly power: network effects in two-sided markets, as they are currently designed. Part II traces the development of the essential facilities doctrine and its application by the courts over more than one hundred years. It covers the highpoint of the doctrine in *Aspen Skiing*, the decline or "death by a thousand cuts"⁶³ from the late 1980s to its *de facto* abandonment in 2004, and new impulses from the 2018 Supreme Court decision in *American Express*⁶⁴ and the 2020 District Court decision in *Sabre*.⁶⁵ Part III provides the foundation for a revived, renewed, and expanded essential facilities doctrine, grounded in lessons from intellectual property law and other theories of innovation. In Part IV, I anchor the new doctrine in the comprehensive toolkit to counter platform power and lay out a framework for its practical application, including a new allocation of the burden of proof and mechanisms to relieve courts from detailed price-setting endeavors. This Part also offers promising pathways to implementation—both through the judiciary and the legislature.

I. BOTTLENECKS FOR DIGITAL COMMERCE

In industrial organization, a bottleneck describes the narrowest constraint of capacity in process or infrastructure. Relating to physical infrastructure, bottlenecks could be narrow roads, border checkpoints or thin cables in the electric grid, for which there is no sufficient bypass. In the absence of substitutes, the bottleneck will define the overall capacity of the entire segment or region, as all traffic must flow through this chokepoint. Architectural design choices and technology define bottlenecks and their location in networks. A new tunnel with a higher capacity than a narrow mountain pass will widen the narrowest segment, increase the traffic flow rate, expand the overall capacity, and shift the chokepoint within the network to the second narrowest point. Dynamically, the

⁶³ Frischmann & Waller, *supra* note 5, at 8–10.

⁶⁴ Ohio v. Am. Express Co., 138 S. Ct. 2274 (2018).

⁶⁵ United States v. Sabre Corp., No. CV 19-1548-LPS, 2020 WL 1855433 (D. Del. Apr. 7, 2020), *vacated*, No. 1-19-cv-01548 (3d Cir. July 20, 2020) (vacating without expressing an opinion on the merits of the parties' dispute).

wider tunnel might attract disproportionately more additional traffic, worsen congestion, and decrease flow rates. Digital commerce relies on a variety of resources and builds on multiple layers of infrastructure. To be competitive, a “simple” online merchant requires inputs ranging from the access to goods to server capacity and shipping capabilities, from search engine optimization to packaging, and from customer relations to payment processing. Of course, the merchant also needs employees, office space, electricity, and countless other factors of production to run their business. All of these resources are scarce, but only some form chokepoints for commerce, namely the platforms.

In a given architecture, the governance of bottlenecks defines the outcomes on the secondary market for goods and services on the platform.⁶⁶ Currently, the platform picks the winners and losers.⁶⁷ Markets on the platform do not resemble level playing fields, in which the quality and price of products and services determines their success in the marketplace. That does not need to be the case. Rather, enabling platforms to exercise gatekeeper power over significant parts of the industry is a policy choice. I argue that digital platforms have become the defining bottlenecks for digital commerce, and that they abuse their power to discriminate against third-party businesses, foreclose markets and extract monopoly rents. In short, the secondary markets do not provide allocative efficiency or contribute to distributive equity as they are currently designed.

A. Algorithmic Platforms as “Toll Bridges” for Commerce⁶⁸

Over the last two decades, digital platforms have become crucial marketplaces that bring together demand and supply of goods and services online. Today, platforms define the gestalt of the internet.⁶⁹ They have

⁶⁶ van Schewick, *Network Neutrality and Quality of Service: What a Nondiscrimination Rule Should Look Like*, *supra* note 48, at 24, 52, 107.

⁶⁷ SUBCOMM. ON ANTITRUST, COM. AND ADMIN. L. OF THE H. COMM. ON THE JUDICIARY, 116TH CONG., *supra* note 12, at 6, 63, 148, 382.

⁶⁸ See Arnold, *An Inquiry into the Monopoly Issue*, *supra* note 26.

⁶⁹ COHEN, *supra* note 8, at 41; Cohen, *supra* note 13, at 143.

gained systemic relevance and shape the global economy. Seven out of ten of the most valuable companies globally operate digital platforms,⁷⁰ up from five in 2015.⁷¹ As of August 2020, they represent an aggregate market valuation of \$8.2 trillion. Digital platform-based markets penetrate the entire economy, ranging from car sales to app-stores and from hotel booking to video streaming. Overall, the digital platform economy stretches beyond what we would generally define as commerce and far into our personal sphere, from online communication with friends to sharing recipes and dating.

Commerce platforms are two-sided markets.⁷² On one side, vendors offer their products and services. On the other side, customers buy these products and services. The platform brings vendors and customers together; it intermediates transactions. The level to which the products and services on the platform are integrated into the platform varies. To pick one extreme, Craigslist, only displays offers; buyers can sort through the posts using various search filters. The platform remains “passive.” Amazon’s steering and services reach much further. In fact, Amazon runs a search engine on its platform that decides what consumers see at what time. It also processes payments and may even assume the entire fulfillment process from storage to packaging and delivery. App stores go even beyond processing payments and ensuring delivery. Apps themselves must be tailored to the app store and its respective operating system. Also, the character of apps requires an ongoing relationship with the platform, including updates and interactions with other elements of the phone.

For commerce, the so-called open internet or “network of networks” is becoming a network of platforms.⁷³ Markets for digital platforms are highly concentrated in many sectors. Both the supply and demand sides

⁷⁰ *The 100 Largest Companies in the World by Market Value in 2019 (in Billion U.S. Dollars)*, STATISTA, <https://perma.cc/FA2X-ME5G>.

⁷¹ Feng Zhu & Nathan Furr, *Products to Platforms: Making the Leap*, HARV. BUS. REV. (Apr. 2016), <https://perma.cc/MLD2-ADQA>.

⁷² Rochet & Tirole, *supra* note 46. See Rysman, *supra* note 46, at 125.

⁷³ COHEN, *supra* note 8, at 41.

of the market depend on platforms to access the digital economy.⁷⁴ Many platforms have vertically integrated and ceased to function as impartial umpires in downstream markets. The lack of alternatives enables them to discriminate and extract monopoly rents from an ever-larger section of the overall economy. Their chokehold on downstream markets inflicts a heavy toll on innovation. Third-party merchants, app developers, and content providers depend on Amazon in e-commerce, Google and Apple as app store providers, Google as a search engine operator, and Facebook as a social media platform. Without access to the app stores, the music streaming service Spotify and the game developer Epic cannot reach significant swaths of their customer base. And many applications rely on their access to Facebook's social graph to connect their users or directly run on Facebook infrastructure. Words with Friends and the various versions of Angry Birds fall into that category, for example. Independent businesses have no practical or reasonable alternative.⁷⁵ Overall, current market power held by platform monopolists is a sufficient reason for regulatory intervention. The potential of abuse alone warrants legal safeguards. The ample evidence of actual abuses underscores the urgent need for a remedy and proves that the fear of the platforms' power is justified.

1. *Retail E-Commerce: Amazon*

E-commerce has far outperformed the overall retail sector over the last decade and its dynamic growth continues. The COVID-19 pandemic further accelerated the shift to online shopping.⁷⁶ However, the share of retail e-commerce as a percentage of total retail sales varies enormously by product category. As of May 2020, the market research company eMarketer estimates the share of books, music & video sold online at 63%

⁷⁴ *Id.*

⁷⁵ The lack of practicable or reasonable alternatives provided the basis of antitrust access rights in older jurisprudence. See *United States v. Terminal R.R. Ass'n of St. Louis*, 224 U.S. 383, 397 (1912); *MCI Commc'n Corp. v. Am. Tel. & Tel. Co.*, 708 F.2d 1081, 1132–33 (7th Cir. 1983).

⁷⁶ ANDREW LIPSMAN, INSIDER INTELLIGENCE, US ECOMMERCE BY CATEGORY 2020: HOW THE PANDEMIC IS RESHAPING THE PRODUCT CATEGORY LANDSCAPE 6 (July 2020).

and computer & consumer electronics at 50%, for example.⁷⁷ At the lower end of the spectrum, only 3.7% of food & beverages and 5.2% of auto & parts are sold through the Internet.⁷⁸ Yet, the categories lagging behind are set to show the largest growth rates in 2020, with 58.5% for food & beverage and 32.4% for health, personal care & beauty sales.⁷⁹

Functionally, the Amazon ecosystem consists of two main elements—the platform and commerce, to use Lina Khan’s understanding of vertically integrated platforms.⁸⁰ The platform refers to Amazon Marketplace, a two-sided market that connects buyers and sellers, with varying levels of integration. Of all third-party vendors, only 6% fulfill all their orders themselves, while 66% rely exclusively on fulfillment by Amazon and 29% use a hybrid of fulfillment by Amazon and self-fulfillment.⁸¹ Commerce refers to products sold by Amazon, including regular resales and private-label business. Here, Amazon’s own sales put the platform in direct competition with third-party vendors. While Amazon started as a pure retailer, its Marketplace has attracted a total of 8.7 million sellers globally, of which 2.2 million are active.⁸² The platform’s U.S. business, Amazon.com, is home to 461,000 active sellers as of August 2020.⁸³ Today, Marketplace accounts for 52% of all units sold on Amazon.⁸⁴ Its appeal to merchants does not come as a surprise. Amazon offers incredibly low market entry barriers for vendors. For example, 59% of merchants on Amazon spend no more than \$5,000 total to kickstart their businesses and 60% of merchants were able to set up their businesses within three months or less.⁸⁵ These numbers are all the more impressive

⁷⁷ *Id.* at 7.

⁷⁸ *Id.*

⁷⁹ *Id.* at 6.

⁸⁰ Khan, *supra* note 6, at 985–92.

⁸¹ JUNGLE SCOUT, THE STATE OF THE AMAZON SELLER 2020 8 (2020), <https://perma.cc/6RYT-MPEL>.

⁸² Number of Sellers on Amazon Marketplace, MARKETPLACE PULSE, <https://perma.cc/6M6C-UYNY>.

⁸³ *Id.*

⁸⁴ Percentage of paid units sold by third-party sellers on Amazon platform as of 1st quarter 2020, STATISTA, <https://perma.cc/F9AX-7FAY>.

⁸⁵ JUNGLE SCOUT, *supra* note 81, at 17.

given that 60% of all vendors lacked prior experience as e-commerce entrepreneurs⁸⁶—an example of how low market entry barriers strengthen positive competition and, ultimately, benefit society.⁸⁷

Amazon is the uncontested leader in e-commerce in the United States (and Europe).⁸⁸ In July 2020, Amazon reported net sales for the second quarter just short of \$89 billion.⁸⁹ This is a 40% increase over 2019,⁹⁰ which far exceeded market expectations and led Amazon stocks to soar.⁹¹ As of May 2020, the e-commerce analyst eMarketer estimated Amazon's share of overall retail e-commerce in the United States at 38%.⁹² Amazon's market share dwarfs that of its rivals.⁹³ Yet, while this metric has been central in public and academic discourse, it paints an incomplete picture of Amazon's real dominance. First, the rest of the market is fragmented; Amazon's closest competitor, Walmart, grew significantly in 2020 but still only commands a 6% market share in e-commerce, less than one sixth that of Amazon.⁹⁴ Moreover, several of the top 10 e-commerce retailers are specialty vendors focusing on digital products, such as Apple with its 4% market share.

Second, “retail e-commerce” does not reflect an adequate product market definition for the purposes of antitrust law.⁹⁵ And Jeff Bezos’

⁸⁶ *Id.*

⁸⁷ See Mesut Savrul et al., *The Potential of E-Commerce for SMEs in a Globalizing Business Environment*, 150 PROCEDIA SOC. AND BEHAV. SCI. 35 (Sept. 2014); Gerald Singham, *The Benefits and Harms of E-Commerce on Competition Law*, JD SUPRA (Apr. 6, 2017), <https://perma.cc/9LQY-SB4K>.

⁸⁸ LIPSMAN, *supra* note 76, at 7–8.

⁸⁹ Amazon.com, Inc. Q. Report (Form Q-10) 4 (July 31, 2020).

⁹⁰ *Id.*

⁹¹ Annie Palmer, *Amazon Sales Soar as Pandemic Fuels Online Shopping*, CNBC, (July 30, 2020, 3:32 PM EDT) <https://perma.cc/P7KC-K2MF>.

⁹² ANDREW LIPSMAN & CINDY LIU, INSIDER INTELLIGENCE, US ECOMMERCE 2020: CORONAVIRUS BOOSTS ECOMMERCE FORECAST AND WILL ACCELERATE CHANNEL-SHIFT 7–8 (2020).

⁹³ Jay Greene & Abha Bhattacharai, *Amazon’s Virus Stumbles Have Been a Boon for Walmart and Target*, WASH. POST (July 30, 2020 4:02 PM PDT), <https://perma.cc/4Y58-5VNK>; LIPSMAN, *supra* note 76, at 7–8.

⁹⁴ LIPSMAN, *supra* note 76, at 7–8; LIPSMAN & LIU, *supra* note 92, at 7–8.

⁹⁵ Priya Anand, *What’s Amazon’s Share of Retail? Depends Who You Ask*, INFORMATION (June 13, 2019, 7:02 AM), <https://perma.cc/4TWB-QLYJ> (quoting M. Stoller).

references to the fact that “Amazon accounts for less than 1% of the \$25 trillion global retail market and less than 4% of retail in the U.S.” is even less relevant in this context.⁹⁶ The relevant market rather depends on whether products are substitutes for each other, meaning whether they are “reasonably interchangeable.”⁹⁷ Lawnmowers, for example, are by no means interchangeable with books, and Wayfair’s selling rugs does not put competitive pressure on Amazon’s offering of TVs. It follows that Amazon’s average market share over variety of product markets provides little information about Amazon’s market power. And, indeed, Amazon’s market share differs drastically by product category: Amazon sells 79% of all books, music & video, 45% of all computer & consumer electronics sold online, and 42% of toys & hobby items sold online, but only 14% of auto & parts and 24% of food and beverages sold online.⁹⁸ Thus, the categories of “retail e-commerce,” and, even more so “retail in the U.S.,” not only fall short of capturing the full picture of market power, but actively distort the picture and conceal much higher levels of concentration within the relevant product markets, i.e. those where mutual substitutionally creates competitive pressures.

Third, consider the third-party merchant’s dependence on Amazon as the infrastructure for e-commerce. In the recent House hearing, Antitrust Subcommittee Chair Cicilline recounted interviews conducted as part of the House investigation into anticompetitive behavior. One small business owner interviewed said: “We’re stuck. We don’t have a choice,

⁹⁶ *Online Platforms and Market Power*, *supra* note 6 (statement of Jeff Bezos, CEO of Amazon, Inc.).

⁹⁷ United States v. E. I. Du Pont de Nemours & Co., 351 U.S. 377, 395–96 (1956). (“In considering what is the relevant market for determining the control of price and competition, no more definite rule can be declared than that commodities reasonably interchangeable by consumers for the same purposes make up that ‘part of the trade or commerce,’ monopolization of which may be illegal.”) To determine whether products are interchangeable, antitrust law relies mainly on the so-called SSNIP-Test, which simulates a “small but significant and non-transitory increase in price” by a hypothetical monopolist for the product category. All products of that hypothetical monopolist of similar products that are not substituted as a consequence of a 5-10% increase in price from the relevant product market.

⁹⁸ LIPSMAN, *supra* note 76, at 8.

but to sell through Amazon.” Another said: “They’ve never been a great partner, but you have to work with them.”⁹⁹

The merchants are right in their assessment. There is no practical alternative¹⁰⁰ to Amazon. In terms of customer reach, no other platform comes close to Amazon. Adding Amazon’s one- or two-day delivery options to the picture further widens the gap between Amazon and everyone else. Amazon Prime plays a major role as well. As of December 2019, Amazon Prime had 112 million subscribers, up from 101 million one year before.¹⁰¹ By locking these customers into the Amazon ecosystem, the company further enhances the value of its services to third party merchants relative to what other platforms could offer.¹⁰²

53% of vendors see themselves in direct competition with Amazon’s products.¹⁰³ In this environment, the platform prioritizes its private label products over those of independent merchants—a practice called self-preferencing. Take the Buy Box, which prominently features one specific offer next to the display of the product and lets customers put the item in the cart or buy it with one click.¹⁰⁴ It comes as no surprise that Buy Box accounts for 80 to 90% of all Amazon sales.¹⁰⁵ Only a fraction of customers, an estimated 17%, even consider the offers of other sellers. Amazon’s proprietary and secret algorithms¹⁰⁶ admit offers based on a set of criteria, including price and performance metrics like ratings, response times, and

⁹⁹ *Online Platforms and Market Power*, *supra* note 6 (statement of David Cicilline, Chair, Subcomm. on Antitrust, Com., and Admin. Law).

¹⁰⁰ The lack of practicable or reasonable alternatives provided the basis for antitrust access rights in older jurisprudence. See *United States v. Terminal R.R. Ass’n of St. Louis*, 224 U.S. 383, 397 (1912); *MCI Commc’ns Corp. v. Am. Tel. & Tel. Co.*, 708 F.2d 1081, 1132–33 (7th Cir. 1983).

¹⁰¹ *Number of Amazon Prime Members in the United States as of December 2019*, STATISTA (Dec. 2019), <https://perma.cc/E6WW-DZXW>.

¹⁰² Khan, *supra* note 10, at 750–53.

¹⁰³ JUNGLE SCOUT, *supra* note 81, at 24.

¹⁰⁴ Dave Hamrick, *How to Win the Amazon Buy Box*, JUNGLE SCOUT (Jan. 4, 2021), <https://perma.cc/T7XD-X946>.

¹⁰⁵ REPRICEREXPRESS, *HOW TO WIN THE AMAZON BUY BOX IN 2020* 4 (2020); Leanna Zeibak, *How to Win the Amazon Buy Box in 2021*, TINUITI (Mar. 25, 2020), <https://perma.cc/8MDZ-L95P>.

¹⁰⁶ Hamrick, *supra* note 104.

delivery speeds.¹⁰⁷ (Amazon does not allow for rating of its fulfillment.)¹⁰⁸ While some of the determining factors certainly reflect consumer preferences and anticipated consumer choices, such as delivery speeds¹⁰⁹ and ratings, others seem to put Amazon's interests first. For example, reports suggest that Amazon punishes vendors for selling the same product elsewhere for a lower price.¹¹⁰ Amazon, thereby, directly implements the equivalent of a so-called most-favored-nation-clause which contractually obliges vendors to offer the most favorable conditions on the platform in question.¹¹¹ Moreover, Amazon also gives priority to Prime sellers, who are more deeply woven into Amazon's ecosystem.¹¹²

An extensive investigation by the Wall Street Journal, published in April 2020, debunks earlier statements of the company, including statements made before Congress,¹¹³ that it does not use seller specific data from third-party sellers' transactions to design and market its private-label products.¹¹⁴ The reason for the data collection: it "can help Amazon decide how to price an item, which features to copy or whether to enter a product segment based on its earning potential."¹¹⁵ A former Amazon employee described Amazon's approach as: "There is a rule [not to use seller specific data], but there is nobody enforcing or spot checking. . . .

¹⁰⁷ Zeibak, *supra* note 105.

¹⁰⁸ Mitchell & Sussman, *supra* note 18.

¹⁰⁹ Specifically, delivery speeds have a reputation for high consumer elasticity. See Samantha Radocchia, *Why Consumer Demand For Faster Shipping Will Force Supply Chains To Change Strategies*, FORBES (Jan. 18, 2019, 11:14 AM EST), <https://perma.cc/3YNK-WSPV>; Tom Ryan, *How Elastic is Amazon Prime's Subscription Price?*, RETAILWIRE (Feb. 3, 2014), <https://perma.cc/2GNA-UB6Y>. For the interplay with Amazon Prime subscriptions and resulting lock-in effects, see Khan, *supra* note 10 at 750–53.

¹¹⁰ Guadalupe Gonzalez, *Phantom Buy Buttons, Performance Dings: The Scariest Things That Amazon Sellers Say Keep Them Up at Night*, INC. (Oct. 25, 2018), <https://perma.cc/EB8K-BX8N>; Zeibak, *supra* note 104.

¹¹¹ See Baker & Morton, *supra* note 48.

¹¹² Hamrick, *supra* note 104.

¹¹³ *Online Platforms and Market Power, Part 2: Innovation and Entrepreneurship: Hearing Before the Subcomm. on Antitrust, Com., and Admin. L. of the H. Comm. on the Judiciary* (July 16, 2019) (statement of Nate Sutton, associate general counsel, Amazon, Inc.).

¹¹⁴ Mattioli, *supra* note 18.

¹¹⁵ *Id.*

It's a candy shop—everyone can have access to anything they want.”¹¹⁶ Moreover, Jeff Bezos acknowledged that the combination of data from two merchants suffices to comply with the policy to only use aggregated data sets.¹¹⁷ The grotesque result of the abusive behavior: once Amazon has used transaction data to imitate third-party merchants’ products, the vendors are forced to invest in marketing and preferential search placements on the platform—in case of Amazon’s imitation of a small company’s commercially successful trunk organizer, \$60,000 per month.¹¹⁸ And the situation is getting worse: A staggering 58% of third-party vendors indicate that “Amazon has made it harder for them to compete in their product category in the past year.”¹¹⁹

Other examples of Amazon’s abuse of gatekeeper power relate to the internal processes and commercial relationships between the platform and third-party sellers. Many third-party sellers report restrictions on their business or even being delisted without notice, proper cause, or adequate procedure.¹²⁰ In fact, “76% of sellers are concerned about Amazon limiting or shutting down their account and/or listings seemingly abruptly or without reason,” according to a survey by e-commerce analyst Jungle Scout.¹²¹ Freed from competitive pressures, Amazon can hang the sword of Damocles over Amazon’s partners’ heads and demand absolute obedience.

European antitrust authorities have led the charge to rein in Amazon’s gatekeeper power.¹²² Abusive terms and conditions formed the

¹¹⁶ *Online Platforms and Market Power*, *supra* note 6 (statement of Pramila Jayapal, Member, H. Comm. on the Judiciary).

¹¹⁷ *Id.* (statement of Jeff Bezos, CEO of Amazon, Inc.).

¹¹⁸ Mattioli, *supra* note 18. See Makena Kelly, *Democrats Want to Know if Amazon ‘Lied’ About Using Platform Data to Create Products*, VERGE (Apr. 24, 2020, 12:02 PM EDT), <https://perma.cc/2Z76-6T4Y>; Jason Del Rey, *Did Amazon Lie to Congress? Top Antitrust Lawmakers Want to Know*, VOX (Apr. 23, 2020, 6:07PM EDT), <https://perma.cc/L34L-JZV8>.

¹¹⁹ JUNGLE SCOUT, *supra* note 81, at 24.

¹²⁰ Van Loo, *Federal Rules of Platform Procedure*, *supra* note 14.

¹²¹ JUNGLE SCOUT, *supra* note 81, at 24.

¹²² Adam Satariano, ‘This Is a New Phase’: Europe Shifts Tactics to Limit Tech’s Power, N.Y. TIMES (July 30, 2020), <https://perma.cc/G7Y4-6VKC>.

basis of an investigation conducted by the German antitrust watchdog, the Federal Cartel Office, which recently ended with far reaching concessions from Amazon.¹²³ Italy, Austria, and Luxembourg pursued similar charges into discriminatory behavior.¹²⁴ In 2019, the European Commission launched a formal investigation into both Amazon's general terms and the access conditions for the Buy Box.¹²⁵ The Commission's investigation is still underway and could result in injunctions or substantial fines against Amazon—up to 10% of the company's global turnover.¹²⁶ In the U.S., both the Department of Justice and the FTC have launched broad investigations into Amazon and other digital platforms, albeit focusing mainly on the platforms' past acquisitions and exclusive contracting.

2. OS Specific App Stores: Apple and Google

Globally, users downloaded 204 billion mobile apps in 2019.¹²⁷ Applications are tied to the operating systems of the phones and tablets. Almost all mobile devices run either Android, provided by Google or Apple iOS, provided by Apple. Aside from third-party Android stores in China, Google and Apple all but divide up the market for smart phone application platforms with the Google Play Store and the Apple App Store. In 2019, users downloaded 85 billion apps from the Google play store, and 31 billion from the Apple App Store.¹²⁸ As of 2018, the Google Play Store accounts for 36% of consumer spending, while the iOS App Store brings in 65%.¹²⁹ The vast majority of Android and iOS apps are offered free of

¹²³ BUNDESKARTELLAMT, CASE SUMMARY B2-88/18, 7–8 (July 19, 2019).

¹²⁴ Robert Bell, *EU Commission Scrutinizes On-Line Platforms with Competition Investigation into Amazon*, LEXOLOGY (Oct. 11, 2019), <https://perma.cc/S4YD-ZMXV>.

¹²⁵ European Commission Press Release IP/19/4291, Antitrust: Commission Opens Investigation into Possible Anti-Competitive Conduct of Amazon (July 17, 2019).

¹²⁶ Council Regulation (EC) No. 1/2003 of 16 Dec. 2003, art. 23, sec. 2, cl. 3, 2003 O.J. (L1) 16-17.

¹²⁷ *Number of Mobile App Downloads Worldwide From 2016 to 2020*, STATISTA, <https://perma.cc/2PW9-J6V4>.

¹²⁸ *Mobile App Downloads Worldwide From 2018 to 2024, by Store*, STATISTA, <https://perma.cc/9Y8D-4WXV>.

¹²⁹ *Global Mobile App Sales Revenue Distribution Between the Apple App Store and Google Play from 2012 to 2018*, STATISTA, <https://perma.cc/R6D7-SJ76>.

monetary charges, 96% and 92% respectively.¹³⁰ Rather, in-app purchases and advertisement spending drive the revenues.

Third-party app developers lack practical and reasonable alternatives to the two leading platforms—a claim on the basis of which Epic Games challenges Apple and Google over the removal of the game Fortnite in a lawsuit filed in August of 2020.¹³¹ In fact, if developers aim to reach the entire market, they rely on both platforms. Especially developers that facilitate communication in the broader sense cannot afford to lose half the market. And for developers that specifically cater to a subgroup of smart phone users, one app store might control the access to most of their audience. Moreover, developers remain tied to the app stores beyond the initial download. First, the application continuously interacts with the operating system on the device. Google and Apple ensure interoperability and could terminate it at any point. Second, the app stores provide libraries of code on which many third-party apps depend.¹³² Third, apps require frequent updates, and these can only be delivered through the app stores. Fourth, the app stores provide ways and means to monetize applications, through in-app purchases and advertisements. To varying degrees, Google and Apple insert themselves into these transactions as intermediaries.

Google and Apple also compete in the secondary market for apps themselves. Google's apps reach 186 million users, Apple's 105 million.¹³³

¹³⁰ *Distribution of Free and Paid Apps in the Apple App Store and Google Play as of June 2020*, STATISTA, <https://perma.cc/JU27-VM6S>.

¹³¹ Complaint at 6, 29, 35, 39, 48–49, Epic Games, Inc. v Apple, Inc., No. 4:20-cv-05640-YGR

(N.D. Cal. Aug. 13, 2020). The parallel complaint against Google is not specifically based on the essential facilities doctrine and its precondition of a lack of reasonable alternatives, but relies on similar factual assertions, Complaint at 7, 28–30, 33, 35, Epic, Inc. v. Google, LLC, No. 3:20-cv-05671 (N.D. Cal. Aug. 13, 2020). See also Complaint at 22, Blix, Inc. v. Apple, Inc., No. 1:19-cv-01869 (D. Del. Oct. 4, 2019). See also Al-lensworth, *supra* note 34, at 602–603.

¹³² Commission Decision of July 18, 2018, Case AT.40099, C(2018) 4761, 136–37. See also Nikolas Guggenberger, *The Epic Battle for the Soul of Antitrust*, VERFASSUNGSBLOG (Sept. 2, 2020), <https://perma.cc/QU9S-PQAK>.

¹³³ *Leading Mobile App Publishers in the United States as of September 2019, Based on Audience Size*, STATISTA, <https://perma.cc/WCS2-C68B>.

Like Amazon, the app store operators prioritize their own applications. The most obvious example lies in preinstalling their own apps and setting them as defaults. In a rare example of opening its platform to competitors, as of recently, Apple no longer prevent users from setting other defaults.¹³⁴ Yet, the power of default settings remains immense, either way. This insight gave rise to the European Commission's investigation into Microsoft's default setting of the browser to its own Internet Explorer in 2009 and informed the subsequent order to let consumers actively choose their browser.¹³⁵

Both app platforms hold complete control over access to their ecosystems and reserve the ability and right to delist third-party applications at any time. Google and Apple impose restrictive conditions on the apps' design that foreclose the market and do not find justifications in cybersecurity needs. Even Microsoft's cloud gaming service xCloud and Nvidia's GeForce Now, for example, found themselves shut out of iOS.¹³⁶ The reason for the denial of access likely lies in Apple's strict control and

¹³⁴ Mark Gurman, *Apple Weighs Letting Users Switch Default iPhone Apps to Rivals*, BLOOMBERG (Feb. 20, 2020, 3:00 AM PST), <https://perma.cc/3LHL-CSDK>; Michael Potuck, *How to Change Default Email and Browser Apps*, 9TO5MAC (Oct. 21, 2020, 12:00 AM PT), <https://perma.cc/6XZZ-YK4N>; David Price, *How to Change Your iPhone's Default Apps (In iOS 14 and iOS 13)*, MACWORLD (Feb. 09, 2021), <https://perma.cc/MDT4-S3ET>; Tom Warren, *iOS 14 Is a Chance for Apple to Lower Its Walls*, VERGE (Feb. 21, 2020, 12:34 PM EST), <https://perma.cc/494V-XQL8>. Apple did not implement the changes quite as expected. With the roll-out of the new OS, the phones reverted to the Apple defaults after a reboot, and the following update that included a fix caused the phones to revert to the Apple defaults once again. See Mikael Markander, *Embarrassing iOS 14 Bug Reverts Your App Defaults*, MACWORLD (Sept. 21, 2020), <https://perma.cc/8WEU-VK2F>; Tom Ryan, *How Elastic is Amazon Prime's Subscription Price?*, RETAILWIRE (Feb. 3, 2014), <https://perma.cc/AXD2-NBVC>; Chris Welch, *iOS 14 Switches Default Apps Back to Apple's Safari and Mail after a Reboot*, VERGE (Sept. 17, 2020, 3:17 PM EDT), <https://perma.cc/77Q3-KRQV>; Chris Welch, *iOS 14 Resets Default Email and Browser Apps after App Store Updates*, VERGE (Oct. 21, 2020, 9:43 AM EDT), <https://perma.cc/7PUP-4KM6>.

¹³⁵ Commission Decision of Dec. 16, 2009, Case COMP/C-3/39.530, 9-13; European Commission MEMO/09/15, Antitrust: Commission Confirms Sending a Statement of Objections to Microsoft on the Tying of Internet Explorer to Windows (Jan. 17, 2009).

¹³⁶ Nick Statt, *Apple Confirms Cloud Gaming Services like XCloud and Stadia Violate App Store Guidelines*, VERGE (Aug. 6, 2020, 5:55 PM EDT), <https://perma.cc/6C7W-5PNP>.

monitoring requirements.¹³⁷ Curiously, Apple's own gaming app Apple Arcade also relies on streaming.¹³⁸

Again, mimicking Amazon, Apple prioritizes its own applications in the app store's ranking. According to a New York Times investigation, "Apple's apps have ranked first recently for at least 700 search terms in the store."¹³⁹ In fact, "[s]ome searches produced as many as 14 Apple apps before showing results from rivals."¹⁴⁰ The company responded that the popularity, "user behavior data," and Apple's more generic names for its apps lead to the higher ranking.¹⁴¹ The music streaming app Spotify's ranking for the search term "music" curiously correlated with Apple's political interests: in September 2013, it occupied the top spot; in June 2016, newly launched Apple Music ranked first, Spotify forth; in late 2018, eight Apple apps beat Spotify—including Apple Clips, a movie editing software—Spotify (by then ranked 23); after Spotify complained to the European Commission in early 2019, Spotify climbed back to rank 4.¹⁴²

Rankings matter a lot. For audiobooks.com, a sudden downgrading meant an immediate loss of 25% of daily downloads.¹⁴³ Over time, the percentage for Apple's apps to appear as top search results has steadily increased—with a slight correction in 2019.¹⁴⁴ As the market is mostly consolidated now, Apple can afford to push out successful third party apps and tie customers more tightly into the Apple ecosystem.¹⁴⁵ Apple's practices also force third-party applications to either take that hit or buy

¹³⁷ *Id.*

¹³⁸ Mark Gurman, *Apple's App Store Rules Limit Rival Gaming Services While Arcade Runs Free*, BLOOMBERG (Mar. 25, 2020, 2:00 AM PDT), <https://perma.cc/7U23-5ZYQ>.

¹³⁹ Nicas & Collins, *supra* note 19.

¹⁴⁰ *Id.* ("Though competitors could pay Apple to place ads above the Apple results.")

¹⁴¹ Mickle, *supra* note 19; Nicas & Collins, *supra* note 19.

¹⁴² Nicas & Collins, *supra* note 19.

¹⁴³ Mickle, *supra* note 19.

¹⁴⁴ Nicas & Collins, *supra* note 19.

¹⁴⁵ Mickle, *supra* note 19.

the advertising slot above the first ranked search result,¹⁴⁶ as a form of rent extraction.

In addition to foreclosing markets, Apple and Google presumably also extract monopoly rents.¹⁴⁷ Apple charges 30% on certain in-app purchases.¹⁴⁸ For in-app subscriptions the fee starts at 30% and drops to 15% after one year.¹⁴⁹ Apple exempts so-called “reader apps” from the fee, which include newspapers and some streaming services.¹⁵⁰ Google’s fee structure is essentially identical.¹⁵¹ To prevent a general shift to outside-app subscriptions, Apple prohibits “directly or indirectly target[ing] iOS users to use a purchasing method other than in-app purchase”¹⁵² In August 2020, the online game developer Epic Games gave users the option to pay directly for in-app purchases at a discount of 20%—to avoid the commission fees.¹⁵³ As a result, both app stores delisted the app.¹⁵⁴ In response to the delisting, Epic Games filed a law suit against Apple and Google, as it relates to Apple, among others, based on the claim that the app stores are essential infrastructure for the company.¹⁵⁵

In November 2020, Apple announced its “App Store Small Business Program,” which “features a reduced commission rate of 15% on paid apps and in-app purchases” for “developers who made up to 1 million

¹⁴⁶ *Id.*

¹⁴⁷ Geradin & Katsifis, *supra* note 30.

¹⁴⁸ Julia Alexander, *A Guide to Platform Fees*, VERGE (Sept. 20, 2020), <https://perma.cc/P4WJ-UYQB>.

¹⁴⁹ *Id.*; BORCK ET AL., *supra* note 29.

¹⁵⁰ APPLE, INC., APP STORE REVIEW GUIDELINES § 3.1.3(a) (last updated Feb. 1, 2021), <https://perma.cc/AAD3-VG78>; William Gallagher & Mike Wuerthele, *App Store Policy and Developer Fee Drama Won’t Change Apple’s Ways at All*, APPLEINSIDER (June 20, 2020), <https://perma.cc/2LUZ-KNYG>; Chaim Gartenberg, *Hey Opens Its Email Service to Everyone as Apple Approves Its App for Good*, VERGE (June 25, 2020, 10:15 AM EDT), <https://perma.cc/835E-STNA>.

¹⁵¹ Google Support, *supra* note 29.

¹⁵² APPLE, INC., *supra* note 150, § 3.1.3(b); European Commission Press Release IP/20/1073, Antitrust: Commission Opens Investigations into Apple’s App Store Rules (June 16, 2020).

¹⁵³ Webster, *supra* note 20.

¹⁵⁴ Bohn, *supra* note 20.

¹⁵⁵ See Complaint, Epic v. Apple, *supra* note 131, at 48–49; see also Complaint, Epic v. Google, *supra* note 131.

USD in proceeds in 2020.”¹⁵⁶ Google followed suit and recently announced that it would, likewise, reduce its fees: down to 15% for the first \$1 million in app revenue for all developers.¹⁵⁷ Though, as helpful as these moves might be for individual small developers—Google claims that “99% of developers globally that sell digital goods and services with Play will see a 50% reduction in fees;”¹⁵⁸ Apple’s pivot is said to have a similar effect¹⁵⁹—they presumably reflect heightened scrutiny of and attention to the fee structure from regulators, legislators and the public writ large than competitive pressures.¹⁶⁰ Also, while the changes impact a high percentage of (small-scale) app developers significantly, they barely put a dent in the revenue base of the app stores, much less that of the (parent) companies.¹⁶¹

Finally, in May 2021 the European Commission sent a statement of objections to Apple relating to its imposition of its in-app purchase

¹⁵⁶ *App Store Small Business Program*, APPLE, INC., <https://perma.cc/K868-T57W>; Sarah Perez, *Apple Dropping App Store Fees to 15% for Small Businesses with Under \$1 Million in Revenues*, TECHCRUNCH (Nov. 18, 2020, 3:00 AM PST), <https://perma.cc/PVG9-JZ78>; Nick Statt, *Apple Will Reduce App Store Cut to 15 Percent for Most Developers Starting January 1st*, VERGE (Nov. 18, 2020, 6:00 AM EST), <https://perma.cc/J5L8-S7KL>.

¹⁵⁷ Mehta Chavi & Subrat Patnaik, *Google to Cut App Store Fee by Half on Developers’ First \$1 Million in Sales*, REUTERS (Mar. 16, 2021, 8:37 AM), <https://perma.cc/PH4J-8UPN>.

¹⁵⁸ Sameer Samat, *Boosting Developer Success on Google Play*, ANDROID DEVELOPERS BLOG (Mar. 16, 2021), <https://perma.cc/QU6V-EK2C>.

¹⁵⁹ See Statt, *supra* note 156 (“According to analytics company Sensor Tower, an estimated 98 percent of developers would be eligible for the 15 percent cut, but those developers generated just 5 percent of the App Store’s total revenue last year.”).

¹⁶⁰ Kif Leswing, *Google and Apple Are Giving up Less than 5% of Their Revenue from Apps with Payout Changes, Analytics Firm Estimates*, CNBC (last updated Mar. 16, 2021, 6:07 PM EDT), <https://perma.cc/7X98-BKXS>; Tripp Mickle & Sarah E. Needleman, *Google to Cut Commission It Charges App Developers*, WALL ST. J. (Mar. 16, 2021), <https://perma.cc/LJ3Y-DUVV>; Jack Nicas, *Apple Halves Its App Store Fee for the Smaller Companies*, N.Y. TIMES (Nov. 18, 2020), <https://perma.cc/3JYT-9MNY>; Perez, *supra* note 156.

¹⁶¹ See Leswing, *supra* note 160 (“Neither company is leaving much money on the table with their fee reductions, compared to the scale of their app store businesses, according to a new estimate from app analytics firm Sensor Tower: If the 15% fee schedule on revenue up to \$1 million had been in place on Google Play in 2020, Google would have missed out on \$587 million, or about 5% of Sensor Tower’s estimate of \$11.6 billion in Google Play fees for the year. If Apple’s program had been in place for 2020, Sensor Tower estimates that it would have missed out on \$595 million, or about 2.7% of its estimated \$21.7 billion in App Store fees in 2020.”).

system and the 30% commission, as part of its investigation into potential competition law violations.¹⁶² The (potential) impact of the Commission's recent announcement and its alignment with standing doctrine is already controversially discussed.¹⁶³ In any case, with only two major app stores and some customer groups potentially heavily concentrated in one ecosystem, app developers lack practical and reasonable alternatives to the offers by Apple and Google. The numerous examples of anticompetitive behaviors showcase how the app store owners indeed can and will abuse their gatekeeper positions.

3. *Search: Google*

Google is the gateway to the internet. It launched as a "horizontal," or general purpose, search engine," covering all types of information.¹⁶⁴ And despite the company's growth and diversification, Google search has remained the core of the business with its enormous advertisement revenues.¹⁶⁵ In the early days, Google's search engine crawled the web to provide relevant links to third-party websites. According to Google co-founder Larry Page, the idea was "to get [users] out of Google and to the right place as fast as possible."¹⁶⁶ Today, Google still links to third party content. However, as it also provides its own content, it competes with many of the third-party content providers, including so-called "vertical

¹⁶² European Commission Press Release IP/21/2061, Antitrust: Commission Sends Statement of Objections to Apple on App Store Rules for Music Streaming Providers (Apr. 30, 2021).

¹⁶³ Damien Geradin, *Further Thoughts on the Commission's Statement of Objections to Apple on App Store Rules for Music Streaming Providers*, PLATFORM L. BLOG (May 12, 2021), <https://perma.cc/FF4U-K3YE>; Pablo Ibanez Colomo, *The Commission Sends an SO to Apple: Common Carrier Antitrust Picks up Speed*, CHILLIN'COMPETITION (May 3, 2021, 2:09 PM), <https://perma.cc/94PG-5P5E>; Pablo Ibanez Colomo, *Apple, Common Carrier Antitrust and Anticompetitive Effects: A Follow-Up*, CHILLIN'COMPETITION (May 14, 2021, 2:42 PM), <https://perma.cc/R88N-PK4V>.

¹⁶⁴ FTC, STATEMENT REGARDING GOOGLE'S SEARCH PRACTICES 1, Nos. 111–0163 (Jan. 03, 2013).

¹⁶⁵ *Distribution of Google's Revenues from 2001 to 2018, by Source*, STATISTA, <https://perma.cc/49P2-4NXJ>. Google's search engine's principal source of revenue is advertising.

¹⁶⁶ Jeffries & Yin, *supra* note 17.

search engines,”¹⁶⁷ like Yelp for restaurant reviews, or Kayak for flight comparisons.

Google dominates the market for desktop search with 82% of the traffic in the United States as of October 2020.¹⁶⁸ The shift to mobile has not hurt Google. To the contrary, across all platforms, including mobile and tablet, the Google’s share hovers even higher, at 88%.¹⁶⁹ It helped that Google bought the exclusive right to be the default search engine on Apple operating systems and tied its search engine to its own operating system Android—a practice which the European Commission prohibited in 2018 and for which it fined Google €4.3B.¹⁷⁰ Overall, Google’s share of the general internet search market has remained extraordinarily stable over the last five years on both mobile and desktop devices.

All but the very largest companies depend on Google’s search engine. Without being listed, newcomers especially can hardly expect to attract attention and may remain close to invisible. Both arbiter and producer of content, Google has become notorious for preferencing its own integrated offers and demoting third-party services—despite the superior quality of third-party services and to the detriment of users.¹⁷¹ Fiona Scott Morton and David Dinielli offer a comprehensive account of the array of factual and legal types of anticompetitive behavior in a recent report, ranging from exclusive contracting to foreclosure of nascent competitors.¹⁷²

Just recently, The Wall Street Journal uncovered the ways in which Google gives preference to its subsidiary YouTube over Facebook, which hosts the same videos, but with many more views and comments.¹⁷³ This strategy maximizes the attention users devote to Google’s services and,

¹⁶⁷ FTC, *supra* note 164, at 1–2.

¹⁶⁸ *Share of Desktop Search Traffic Originating From Google in Selected Countries as of October 2020*, STATISTA, <https://perma.cc/43Y3-V757>.

¹⁶⁹ *Search Engine Market Share United States of America*, STATCOUNTER GLOBAL STATS, <https://perma.cc/YFQ6-TCBE>.

¹⁷⁰ European Commission, *supra* note 132.

¹⁷¹ Jeffries & Yin, *supra* note 17.

¹⁷² SCOTT MORTON & DINIELLI, *supra* note 17, at 24–36.

¹⁷³ Sam Schechner et al., *Searching for Video? Google Pushes YouTube over Rivals*, WALL ST. J. (July 14, 2020), <https://perma.cc/F4KT-BFFT>.

thus, advertisement revenues and opportunities for further data extraction. And while Google also serves ads to third-party websites, the bulk of its advertisement revenues stems from its own properties.¹⁷⁴ In fact, zero-click searches ending on Google's page are on the rise and account for 61% of all queries on mobile and 49% across mobile and desktop devices.¹⁷⁵ 12% of users' clicks lead them to other Google sites.¹⁷⁶ Additionally, it allows Google to dip into the third-party website's commissions for booking services and recommendations. While prevalent in many areas, the practice gained most prominence in relation to recommendation and comparison platforms.

A recent comprehensive investigation by The Markup revealed the extent to which Google features its own content, or in its parlance, provides "direct answers."¹⁷⁷ On mobile devices, the content that Google extracts from other sources online and displays as a "direct answer" makes up 41% of the first page, and 63% of the area that users can see on a new smart phone without scrolling. For some search terms, users have to scroll up to 42% through the first page, before they encounter the first organic result.¹⁷⁸ Most strikingly, "[i]n one in five searches, non-Google content was entirely absent from the first screen."¹⁷⁹ All this substantially hurts Google's competitors in the secondary market.¹⁸⁰ Travel agencies and comparison platforms were hit especially hard, as Google integrated the same services into its native offerings, like Google maps, which then experience preferential treatment by the search engine.¹⁸¹

¹⁷⁴ Alphabet, Inc., Annual Report (Form 10-K) 29 (Feb. 2, 2021); Jeffries & Yin, *supra* note 17.

¹⁷⁵ Rand Fishkin, *How Much of Google's Search Traffic Is Left for Anyone but Themselves?*, SPARKTORO (June 17, 2019), <https://perma.cc/JZ2L-QKML>.

¹⁷⁶ *Id.*

¹⁷⁷ Alphabet, Inc., *supra* note 174, at 5; Jeffries & Yin, *supra* note 17.

¹⁷⁸ Jeffries & Yin, *supra* note 17.

¹⁷⁹ Leon Yin & Adrienne Jeffries, *How We Analyzed Google's Search Results*, MARKUP (last updated Nov. 18, 2020, 5:18 PM ET), <https://perma.cc/3TA4-S75L>.

¹⁸⁰ Jeffries & Yin, *supra* note 17; Dennis Schaal, *Google's Travel Gains Levy Pain at TripAdvisor and Expedia*, SKIFT (Nov. 7, 2019, 2:45 PM), <https://perma.cc/HY4M-J2UE>.

¹⁸¹ Jeffries & Yin, *supra* note 17; Schaal, *supra* note 180.

In 2017, the European Commission identified Google's self-preferencing related to Google shopping as anticompetitive.¹⁸² The Commission concluded that Google's channeling of traffic away from third-party comparisons and to its shopping service was "outside the scope of competition on the merits."¹⁸³ Notably, the European Commission emphasizes that Google's conduct forecloses vertical search markets and, thus, "reduce[s] the incentives of competing comparison shopping services to innovate" as well as for Google itself.¹⁸⁴ For consumers, the Commission reasons, Google's practice restricts access to the most relevant comparison sites.¹⁸⁵ The decision also rejects all of Google's efficiency claims as unfounded.¹⁸⁶

The FTC, on the other hand, came to the opposite conclusion in 2013, when the agency, in a unanimous decision, found legitimate business justifications for Google's behavior.¹⁸⁷ Instead of search bias, the Commission saw "design changes . . . to improve the quality of its search results, and that any negative impact on actual or potential competitors was incidental to that purpose."¹⁸⁸ Specifically, the FTC qualified "Google's prominent display of its own vertical search results" as primarily driven by the goal "to quickly answer, and better satisfy, its users' search queries by providing directly relevant information."¹⁸⁹ And even where "Google demoted all but one or two comparison shopping properties from the first page of Google's search results" the Commission concludes that the underlying "changes to Google's search algorithm could reasonably be viewed as improving the overall quality of Google's search results because the first search page now presented the user with a greater diversity of websites."¹⁹⁰

¹⁸² Commission Decision of June 27, 2017, Case AT.39740, C(2017) 4444, 76-77.

¹⁸³ *Id.* at 76.

¹⁸⁴ *Id.* at 180–81.

¹⁸⁵ *Id.* at 181.

¹⁸⁶ *Id.* at 197–99.

¹⁸⁷ FTC, *supra* note 164, at 2-3.

¹⁸⁸ *Id.* at 1–2.

¹⁸⁹ *Id.*

¹⁹⁰ *Id.*

In October 2020, the Department of Justice and several States sued Google for “unlawfully maintaining monopolies in the markets for general search services, search advertising, and general search text advertising . . . through anticompetitive and exclusionary practices.”¹⁹¹ The focus of the complaint lies in the agreements and arrangements with which Google leverages its control over Android to secure its monopoly in search and advertising. Among others, Google relies on preinstallation agreements with device manufacturers that ensure Google search engine default status and can even be combined with a prohibition to preinstall any competing search engine.¹⁹²

4. Social Media: Facebook

What Google is to search, Facebook is (almost) to social media. With 3.5 billion monthly¹⁹³ and 2.6 billion daily product users as of 2021,¹⁹⁴ Facebook is the largest social media platform globally. In the United States, Facebook attracts an audience of 190 million people,¹⁹⁵ a staggering 57% of the entire U.S. population. The Facebook ecosystem is comprised of the original Facebook platform, Instagram, Facebook messenger, WhatsApp, and Oculus, a virtual reality creator.¹⁹⁶ For 2019, Facebook reported a total revenue of \$71 billion, almost entirely from advertising.¹⁹⁷ Facebook reached its current size and reach through a combination of organic growth and acquisitions, most famously, WhatsApp and Instagram.¹⁹⁸

In the most comprehensive report on online platforms and digital advertising to date, the UK’s Competition & Market Authority (CMA)

¹⁹¹ Complaint, *supra* note 31, at 2.

¹⁹² *Id.* at 18–19, 37–45.

¹⁹³ *Cumulative Number of Monthly Facebook Product Users as of 1st Quarter 2021*, STATISTA, <https://perma.cc/5QPQ-EXNM>.

¹⁹⁴ *Cumulative Number of Daily Facebook Product Users as of 4th Quarter 2020*, STATISTA, <https://perma.cc/N9PY-NEGL>.

¹⁹⁵ *Leading Countries Based on Facebook Audience Size as of January 2021*, STATISTA, <https://perma.cc/VNV3-99KG>.

¹⁹⁶ Facebook, Inc., Annual Report (Form 10-K) 7 (Jan. 27, 2020).

¹⁹⁷ *Id.* at 42, 47, 54.

¹⁹⁸ Hemphill & Wu, *supra* note 24, at 1885; Khan, *supra* note 6, at 1001.

suggests that Facebook's market share should be measured as a percentage of the time, or attention, users spend on social media.¹⁹⁹ As a result, the entire Facebook ecosystem accounts for 73% of the time spent on social media in the U.K. in 2020; Facebook's core platform accounts for 55% alone.²⁰⁰ While both mark a minor decline in Facebook's share compared to 2015,²⁰¹ it still is a clear sign of market dominance that leaves advertisers, app developers, and other communication services with no reasonable alternative to reach customers.²⁰²

Facebook not only connects users with each other. It also enables publishers to disseminate their content, advertisers to reach their audiences, and app developers to build on its platform, just like Google's and Apple's app stores. These functions of the social network form the parallel to classic infrastructure, like railroad tracks. Lina Khan stresses that "[t]here are at least two sets of market participants that both rely on Facebook's network and find themselves in competition with Facebook: app developers and online publishers."²⁰³ Take app developers. When they build on a platform like Facebook, their application needs to exchange data with Facebook's platform, like an app in Google or Apple's app store. Generally, a flourishing developer community is beneficial to Facebook.²⁰⁴ That is to say, "Facebook could either speculate on new social applications by building them itself, or it could provide a platform for others to do so."²⁰⁵ Yet, ample evidence suggests that Facebook also suppresses applications where it sees a potential that they could threaten its business model.²⁰⁶ This holds both for nascent competitors which

¹⁹⁹ COMPETITION & MKTS. AUTH., *supra* note 17, at 120–22.

²⁰⁰ *Id.* at 121.

²⁰¹ *Id.* at 121–22.

²⁰² Khan, *supra* note 6, at 1001; FIONA M. SCOTT MORTON & DAVID C. DINIELLI, OMIDYAR NETWORK, ROADMAP FOR AN ANTITRUST CASE AGAINST FACEBOOK 11–12 (2020).

²⁰³ Khan, *supra* note 6, at 1001.

²⁰⁴ *Id.*; see *infra* Part I.B.1.

²⁰⁵ Complaint at 26, Reveal Chat Holdco v. Facebook Inc., No. 5:20-cv-00363-BLF (N.D. Cal. Jan. 16, 2020).

²⁰⁶ Khan, *supra* note 6, at 1001–03; MORTON & DINIELLI, *supra* note 202, at 20–29.

provide alternatives to Facebook's core operations and to Facebook's extensions.

Based on a thorough investigation, the CMA concludes that Facebook "degraded the access that other platforms and services have to its application programming interfaces . . . , effectively shutting down the potential for competition."²⁰⁷ This is exactly what the video sharing app Vine had already experienced in 2013—as did the messaging app MessageMe.²⁰⁸ Earlier this year, a class action law suit lead by several independent app providers alleges that Facebook engaged in the same kind of behavior, beginning as early as 2011.²⁰⁹ The lawsuit details how Facebook cut back the competitors' access to its platform where it saw competitive threats: to stifle the development of mobile apps, Facebook limited the access to friend lists and newsfeeds, it prevented competitive third party from buying data, and it blocked some competitors from accessing Facebook's platform entirely.²¹⁰

The CMA also articulated "concerns that Facebook is able to collect data from its business customers when providing developer tools and advertising services." As with Amazon in the e-commerce sector, this enables Facebook to copy and undercut its competitors, especially as it enters new markets.²¹¹ The list of copied features is long and contains prominent examples like Snapchat as well as those that did not manage to become household names, potentially because of Facebook's exclusionary behavior, like Houseparty, which "briefly became the top social-networking app for the iPhone."²¹² While copycat products are not

²⁰⁷ COMPETITION & MKTS. AUTH., *supra* note 17, at 312.

²⁰⁸ Khan, *supra* note 66, at 1001–02; MORTON & DINIELLI, *supra* note 202, at 24.

²⁰⁹ Complaint, *supra* note 205, at 30–50.

²¹⁰ *Id.* at 31–33.

²¹¹ COMPETITION & MKTS. AUTH., *supra* note 17, at 312.

²¹² Betsy Morris & Deepa Seetharaman, *The New Copycats: How Facebook Squashes Competition from Startups*, WALL ST. J. (Aug. 9, 2017, 1:47 PM ET), <https://perma.cc/J83N-RZ9K>; Khan, *supra* note 6, at 1001–02; Adi Robertson, *Emails Show Mark Zuckerberg Feared App Startups Were Building Faster than Facebook in 2012*, VERGE (July 30, 2020, 12:55 PM EDT), <https://perma.cc/7LUM-X3CW>; Deepa Seetharaman, *A Rival's Shadow Looms Over Snapchat IPO*, WALL ST. J. (Feb. 6, 2017, 12:26 AM ET), <https://perma.cc/M3LQ-LDY6>.

guaranteed success stories, with access to Facebook's network, the copycats have significant competitive advantages and require little investment.²¹³ To coerce competitors into sharing data with Facebook in the first place, the company "would demand 'reciprocity' or blacklist them," meaning that competitors had to choose between sharing their data with Facebook or not getting access to the entire Facebook ecosystem.²¹⁴

Now, take Facebook's relationship with publishers—while in different product markets, publishers still compete with Facebook for user attention and advertisement revenue.²¹⁵ Publishers also face a decision between reach and surveillance by Facebook. As Lina Khan describes the trade-off is best exemplified by the Facebook Like Button, which allows readers to share articles directly on Facebook and dramatically increases the potential audience of the publisher.²¹⁶ The downside for the publisher, Facebook now gains detailed insights into her traffic structure and ad revenues, which the social network can leverage against her.²¹⁷ In Dina Srinivasan's words: "Facebook increasingly knew as much about The Wall Street Journal's readers as the Journal did itself."²¹⁸

On top of the exclusionary conduct, Facebook also extracts monopoly rents.²¹⁹ Based on the understanding that users pay for social media services with their attention, Andrea Prat and Tommaso Valetti, describe the concept of attention bottlenecks.²²⁰ The authors model how dominant platforms like Facebook can extract monopoly rents from advertisers by artificially reducing the available user attention. This behavior, the authors argue, eventually translates into higher retail prices and harms

²¹³ For successful copycats, see Shirin Gaffary, *TikTok Clone Instagram Reels Is Just One of the Many Times Facebook Has Copied Its Competitors*, VOX: RECODE (AUG. 5, 2020, 4:05 PM EDT), <https://perma.cc/UWM2-3EQH>.

²¹⁴ Complaint, *supra* note 205, at 33–35.

²¹⁵ Khan, *supra* note 6, at 1003.

²¹⁶ *Id.*

²¹⁷ Srinivasan, *supra* note 48, at 70–73.

²¹⁸ *Id.* at 72.

²¹⁹ *Id.* at 97–98.

²²⁰ Andrea Prat & Tommaso M. Valletti, *Attention Oligopoly* (forthcoming 2021) (electronic copy available at <https://perma.cc/2LGU-9RM8>).

consumer choice and innovation.²²¹ The fact that Facebook is one of only two major advertisement technology platforms, further adds to its market power. Moreover, the lack of competitive pressures allows Facebook to offer less privacy-sensitive applications as it hypothetically could in a competitive environment.²²² The offering of less privacy-sensitive applications stands for higher quality-adjusted prices for consumers and business customers of the platform. The factual evidence of abuse across the major platforms suggests exploring the driving forces behind the platforms' power.

B. Innovation, Allocation, and Network Effects

Digital platforms operate in so-called winner-take-all markets, in which strong consolidating forces lead to high levels of market concentration, frequently resulting in a market with just one relevant player left. Certainly, the leading contributor to the extreme concentration is network effects in two-sided markets and the strategies that platform can employ to "get both sides on board."²²³ This is crucial to defining adequate remedies for the platforms' chokehold on the digital economy. First, it shows why we cannot and should not expect that nascent competitors will be able to challenge incumbents successfully; barriers to entry in the market for platforms are simply too high. Likewise, so-called potential competition from entities that have not, but could enter the market if they saw attractive conditions, will most likely not exert meaningful competitive pressures on incumbents. Second, network effects stand for large-scale efficiencies which might be worth preserving, an insight which would argue for remedies that grant competitors access, like the essential facilities doctrine, over remedies that rely on horizontal breakups.²²⁴ Third, the prevalence of enormous network effects suggests that,

²²¹ *Id.*

²²² SCOTT MORTON & DINIELLI, *supra* note 202, at 25–29.

²²³ Rochet & Tirole, *supra* note 46, at 1013, 1017–20. See Marshall Van Alstyne & Geoffrey Parker, *Platform Business: From Resources to Relationships*, 9 MKTG. INTELLIGENCE REV. 24, 25–26 (2017).

²²⁴ See *infra* Part IV.A.

everything else equal, markets would quickly and organically re-consolidate, after competition were re-established through traditional horizontal break-ups.²²⁵ In essence, platform and network services differ from other industries, goods, and services.

1. *Maintaining Monopolies: Network Effects and Switching Costs*

Most goods are rival. Their usage by one party excludes others from using the same good. Networks, and with them platforms,²²⁶ are different. In 1973, Roland Artle and Christian Averous showed that that telephone network resembles traits of a public good and expressed the utility of the network to a new subscriber as a function of “the number of telephones to which the individual has access,”²²⁷ or, more generally, the relationships it enables.²²⁸ Jeffrey Rohlfs builds on Artle and Averous’ concept, provides a more detailed model, and articulates the now common understanding of network externalities: “The utility that a subscriber derives from a communications service increases as others join the system.”²²⁹ In other words, networks are anti-rival, just like knowledge, ideas, and software.²³⁰ With the utility to a subscriber grows the value of the network.

The term externality emphasizes that users of a network cannot reasonably compensate each other for benefits that their participation in the

²²⁵ See *id.*

²²⁶ For a distinction of networks and platforms, see Cohen, *supra* note 13, at 143–45.

²²⁷ Roland Artle & Christian Averous, *The Telephone System as a Public Good: Static and Dynamic Aspects*, 4 BELL J. ECON. & MGMT. SCI. 89, 90, 97–98 (1973).

²²⁸ Van Alstyne & Parker, *supra* note 223, at 25–26.

²²⁹ Jeffrey Rohlfs, *A Theory of Interdependent Demand for a Communications Service*, 5 BELL J. ECON. & MGMT. SCI. 16, 16 (1974).

²³⁰ Lawrence Lessig, *Do You Floss?*, 27 LONDON REV. BOOKS (Aug. 18, 2005), <https://perma.cc/9ZTX-HZT8>. (“It’s not just that code is non-rival; it’s that code in particular, and (at least some) knowledge in general, is, as Weber calls it, ‘anti-rival’. I am not only not harmed when you share an anti-rival good: I benefit. The reasons are obvious when we consider a more pedestrian example: the English language, say. Language is an anti-rival good: not only does your speaking English not restrict me, your speaking it benefits me. The more people who speak a language, the more useful that language is, at least to those who speak it.”)

network creates.²³¹ This is where proprietary platforms come in: they aggregate network externalities.²³² Platforms then partially monetize the user-created externalities and partially utilize them as market entry barriers against competitors. In other words, under the current market design, network externalities cause network effects which create significant barriers to entry in markets for digital platforms.²³³ The additional utility provided to the same class of users or one side of a multi-sided market is typically referred to as direct network effects. As an example, the more users join Facebook, the more valuable Facebook becomes to other users, as they benefit from opportunities for connections. Indirect network effects describe additional utility for another class of users of the same network or another side of a two or multi-sided market.²³⁴ On platforms for digital commerce, indirect network effects dominate.

As the debate around Big Tech's dominance and anticompetitive behavior heated up in 2019, Google banned the words "network effects" and "barriers to entry" from internal written communication.²³⁵ Instead, Google asked its employees to refer to "valuable to users" and "challenges," respectively.²³⁶ The company's advice on "Communicating Safely"²³⁷ might indeed spare Google from reliving Facebook's painful experiences at the recent House hearing on Big Tech, when representatives gleefully quoted from clumsily honest emails.²³⁸ In these emails, Facebook's CEO, Mark Zuckerberg volunteered the rationale for acquiring Instagram in 2012: his fear of a nascent competitor and awareness of the

²³¹ Ackerberg & Gowrisankaran, *supra* note 46, at 738.

²³² Marshall W. Van Alstyne et al., *Pipelines, Platforms, and the New Rules of Strategy*, HARV. BUS. REV., Apr. 2016, at 54, 57–58.

²³³ See Mark A. Lemley & David McGowan, *Legal Implications of Network Economic Effects*, 86 CAL. L. REV. 479, 503–04 (1998).

²³⁴ See Armstrong, *supra* note 22, at 668–70.

²³⁵ Adrienne Jeffries, *To Head Off Regulators, Google Makes Certain Words Taboo*, MARKUP (Aug. 7, 2020, 8:00 AM ET), <https://perma.cc/L3C7-H8XY>. See also Complaint, *supra* note 31, at 6.

²³⁶ Jeffries, *supra* note 235.

²³⁷ *Id.*

²³⁸ *Online Platforms and Market Power*, *supra* note 6.

power of network effects.²³⁹ Yet, sugarcoating the language neither curtails the power of network effects nor does it lower the barriers to entry in the markets for platforms.

To understand the true power of network effects, ask no other than Google's chief economist Hal Varian. In 1999, before joining Google, he co-authored a seminal book with Carl Shapiro on information and network economics.²⁴⁰ The authors aptly describe the mechanism of network externalities and their impact on switching costs as a market entry barrier for potential competitors in markets for platforms, or in their terminology, networks:²⁴¹ "Network externalities make it virtually impossible for a small network [or platform] to thrive. But every new network has to start from scratch. The challenge to companies seeking to introduce new but incompatible technology into the market is to build network size by overcoming the collective switching costs—that is, the combined switching costs of all users."²⁴² And, using the example of Automated Clearing House transactions, the functional electronic equivalent of check payments, Ackerberg and Gowrisankaran show that substantial fixed costs on one side of a two-sided market translate into switching costs suffice to stall the adoption of a new network or platform.²⁴³

While the precise formula to determine the total value of networks remains contested, it appears clear that the relationship is super-linear. According to what has become known as Metcalfe's law, the connections a network enables and, thus, its utility, increase almost exponentially with the number of its users as nodes. Shapiro and Varian restate this "rule of thumb" to mean that "[i]f there are n people in a network, and

²³⁹ *Id.*; Casey Newton & Nilay Patel, "*Instagram Can Hurt Us*": Mark Zuckerberg Emails Outline Plan to Neutralize Competitors, VERGE (July 29, 2020, 2:07 PM EDT), <https://perma.cc/RM7Z-U9XN>. (Zuckerberg wrote to his CFO David Ebersman: "There are network effects around social products and a finite number of different social mechanics to invent. Once someone wins at a specific mechanic, it's difficult for others to supplant them without doing something different.")

²⁴⁰ SHAPIRO & VARIAN, *supra* note 23.

²⁴¹ *Id.* at 184.

²⁴² *Id.*

²⁴³ Ackerberg & Gowrisankaran, *supra* note 46, at 738, 760.

the value of the network to each of them is proportional to the number of other users, then the total value of the network (to all the users) is proportional to $n * (n - 1)$, or $n^2 - n$.²⁴⁴ Beckstrom takes a somewhat different approach as he focuses on the transactions a network enables: "The value of a network equals the net value added to each user's transactions conducted through that network, valued from the perspective of each user, and summed for all."²⁴⁵ The "beauty" of this approach to measuring the value of networks lies in its application and technological neutrality—the law can serve to evaluate any sort of network or (digital) platform.²⁴⁶ Evidently, network effects have upper boundaries, namely congestion, and can, in some circumstances, even be negative.²⁴⁷ Negative network effects occur where the network creates unwanted connections and enables undesired transactions. On digital platforms, these negative network effects can entail an exposure to dangerous products or defect apps. On social media specifically, they might describe (potential) interactions with people that users may prefer to avoid: sharing private profiles with work colleagues or revealing party pictures to parents or teachers, for example. These parameters for value creation shape the business incentives strategies of the platforms.

In effect, the value of the network, as measured by transactions it enables, renders gradual migrations of customers from one platform to another all but impossible, especially as many consumers single-home—they only actively participate in one network of several with similar features. Overcoming lock-in effects, or the "start-up problem," would require a critical mass of users switching at the same time.²⁴⁸ Mobilizing a critical mass in a short time frame requires an external shock or coordination. The former is very rare—the pandemic arguably propelled Zoom;

²⁴⁴ SHAPIRO & VARIAN, *supra* note 23, at 184.

²⁴⁵ ROD BECKSTROM, BECKSTROM'S LAW: A NEW FUNDAMENTAL MODEL FOR VALUING ANY NETWORK, <https://perma.cc/229Y-GNFP>.

²⁴⁶ Taylor Buley, *How to Value Your Networks*, FORBES (July 31, 2009, 6:45 PM EDT), <https://perma.cc/B2AB-7JG9>.

²⁴⁷ S. J. Liebowitz & Stephen E. Margolis, *Network Externality: An Uncommon Tragedy*, 8 J. ECON. PERSPS. 133, 134 (1994).

²⁴⁸ Rohlfs, *supra* note 229, at 19; Witt, *supra* note 46.

the latter is practically unfeasible and legally constrained. A more gradual approach only seems possible where customers specifically value individual vendors on the platform;²⁴⁹ this seems unlikely in e-commerce, app stores, and search. Even where a new competitor offers an additional novel feature, it will be difficult to attract customers: either this feature needs to be so valuable that users are prepared to forgo the value of incumbents' network effects or valuable enough to convince users to multi-home. Creating a product with these effects is an incredibly high bar.

The intensity of indirect network effects varies for different platforms, of course.²⁵⁰ Empirical work suggests that indirect network effects are substantial where they occur and specifically determinant in the digital economy.²⁵¹ Nair, Chintagunta, and Dubé, for example, find that just the compatibility of Personal Digital Assistants with the Palm Operating System translates into "roughly 22% of the log-odds ratio of the sales," with the caveat that the advantage "could become even larger over time" as software penetration grows.²⁵² Relating to the VHS format, which eventually dominated the videocassette recorder market in the late 1980s, Park finds that indirect network effects account for "70.3% to 86.8% of the log relative sales of VHS to [the competing format] Betamax in each year"—with the logarithm of sales focusing on the relative changes. Despite the empirical work, it remains inherently difficult to quantify the entirety of Amazon's, Google's, and Apple's network effects precisely. Rysman's work on Yellow Pages is instructive as it considers advertisement markets.²⁵³ Yet, it is possible to identify characteristics of their business that shape the intensity. As digital platforms require comparatively little physical infrastructure and a relatively small workforce to operate, the value of their network effects naturally accounts for a comparatively

²⁴⁹ Rohlfs, *supra* note 229, at 19, 30–31.

²⁵⁰ Gandal et al., *supra* note 46, at 44; Lemley & McGowan, *supra* note 233, at 592–93.

²⁵¹ Gandal et al., *supra* note 46, at 58; Hiroshi Ohashi, *The Role of Network Effects in the US VCR Market, 1978–1986*, 12 J. ECON. & MGMT. STRATEGY 447, 474–76 (2003).

²⁵² Nair et al., *supra* note 46, at 23, 47.

²⁵³ Marc Rysman, *Competition between Networks: A Study of the Market for Yellow Pages*, 71 REV. ECON. STUD. 483 (2004).

large percentage of the network's total value. While jurisdictions around the world have started to assert their regulatory authority to address this reality, digital platforms remain largely unconstrained by (national) borders, which facilitates the acquisition of global scale.

For two-sided markets, Armstrong identifies three metrics that drive the impact of one group on the conditions the other group finds in the market: (1) the “[r]elative size of cross-group externalities;” (2) the presence of “[f]ixed fees or per-transaction charges;” and (3) “[s]ingle-homing or multi-homing.”²⁵⁴ Applied to digital platforms these insights explain the journey of platforms over the time of their maturing—from open to closed ecosystems. Relating to the first proposition, in the early days, e-commerce platforms need to attract sellers and app store developers and, thus, offer appealing conditions to these groups. At that point the seller/developer-side externalities on the buyer/user-side exceed those in the other direction. Pertaining to proposition two, platforms heavily rely on transaction-based fees instead of lump sums to lower network effect-induced adoption costs. This holds both for seller and buyer sides of a market. As it concerns the third proposition, platforms start as “competitive bottlenecks,” in which one side of the market chooses one platform and the other side relies on that platforms to reach specific users.²⁵⁵ Generally, end-consumers tend to single home, while the vendors more likely multi-home.²⁵⁶

All this changes with the tipping of the market.²⁵⁷ Once a platform wins the competition for the market, it no longer needs to offer specifically appealing conditions to vendors, due to their reliance on the platform. The incumbent can introduce or increase lump-sum fees, like memberships, to augment network effects. And, the now monopolist does not need to cross-subsidize the single-homing customers any longer. As described above, Amazon, Google, and Apple have taken exactly these

²⁵⁴ Armstrong, *supra* note 22, at 669–70.

²⁵⁵ *Id.* at 678.

²⁵⁶ *Id.*

²⁵⁷ *Id.* at 668–69.

steps. Network effects now serve as the basis for rent extraction and barriers to entry for competition. A perfect example is the Amazon prime membership. Amazon's increasing market power allowed the platform to extract higher rents by relying more heavily on lump sum fees, which increase network effects for sellers. In an earlier stage of the market, this would not have been possible. The common thread in Julie Cohen's words: while "[p]latforms exploit the affordances of digital information and communications networks," they "thwart certain other kinds of networking that might facilitate defection to rival platforms."²⁵⁸ Walled-off from competitive pressures, the platforms leverage their monopoly power to foreclose dependent markets and extract monopoly rents.

Network architectures vary greatly, and so do platforms that sit at the networks' core. At one extreme, networks, and with them platforms, can place their major computation power or "brains" at their end, in the hands of the users of the network or platform. This architecture is usually referred to as the end-to-end principle;²⁵⁹ its best example is the early open internet. At the other extreme, networks or platforms can internalize and centralize the brainpower (almost) entirely. Endpoints then become mainly consumers of centrally planned innovation, like broadcasting television or the old telephone network with standardized devices.²⁶⁰ By and large, digital platforms have entrusted significant parts of the "brainpower" and decision-making capacity with the independent nodes on the edges of platform, the third-party vendors, app developers, and

²⁵⁸ COHEN, *supra* note 8, at 41.

²⁵⁹ J. H. Saltzer et al., *End-to-End Arguments in System Design*, 2 ACM TRANSACTIONS ON COMPUT. SYS. 277, 278 (1984). ("The function in question can completely and correctly be implemented only with the knowledge and help of the application standing at the endpoints of the communication system. Therefore, providing that questioned function as a feature of the communication system itself is not possible. (Sometimes an incomplete version of the function provided by the communication system may be useful as a performance enhancement.) We call this line of reasoning against low-level function implementation the end-to-end argument.").

²⁶⁰ As it relates to telephones, this description only takes into account the technical transmission. The content-related computation power in the telephone network sits exclusively at the networks' ends; telephone networks do not moderate content, but simply transmit it.

content creators.²⁶¹ Many have deliberately chosen to open their platforms to attract innovation and leave room for experimentation.²⁶² This strategy also requires less starting capital, which is a crucial advantage, especially in the early stages of growth. With increasing volumes, economies of scale reward centralization of operations and platforms pull business closer to its core—they imitate products and crowd out competitors, a practice in which Amazon, Google, and Apple all engage.

As it stands, indirect network effects and resulting winner-take-all markets lead to enormous incentives for innovation in the early stages of an emerging market and fierce competition for the market in the form of “penetration pricing.”²⁶³ The value of the tipping of the market to a firm, measured as “the percent increase in the expected present discounted value of profits for a given initial installed base advantage,” is enormous.²⁶⁴ Once the market has tipped in favor of the leading platform, the network effects it creates form market entry barriers that safeguard the incumbent’s position.²⁶⁵ At that stage, incentives for innovation have plummeted on the primary market, especially for gradual innovation—the lead of the incumbent afforded by network effects becomes insurmountable. Innovation on the secondary market on the other hand, is stifled by the monopolist’s chokehold on that market and its ongoing rent extraction. In effect, this frontloads all incentives for investments to the rather short period of competition for the market—almost comparable to an infinite patent that covers an entire industry.

In the longer run, the product of network effects shifts from incentives for dynamic innovation to windfall profits. Consider a simplified model of changing reasons for joining a platform. During the phase of the competition for the market, new customers join platforms for their

²⁶¹ For design choices and their impact on innovation and profit, see Geoffrey Parker & Marshall Van Alstyne, *Innovation, Openness, and Platform Control*, 64 MGMT. SCI. 3015 (2018).

²⁶² *Id.* at 3026.

²⁶³ Dubé et al., *supra* note 46, at 217.

²⁶⁴ *Id.* at 240.

²⁶⁵ See Lemley & McGowan, *supra* note 233, at 522.

quality and price. By joining, they create indirect network effects. I call these first-order effects. After the tipping of the market, existing network effects provide the preeminent reason for marginal customers to join. I refer to this as second-order effects. Put differently, the reward is no longer immediately connected to the innovation, but to the additional users the original innovation attracted. Arguably, an investor would price all future network effects into investments during the competition for the market. However, even if such a market existed and priced all future network effects adequately, it is more than questionable whether the pre-sale of all second-order network effects creates the optimal incentives for innovation. Also, the platform's core innovation might well lie in the increase of network effects, for example by providing a global instead of a local network. Still, especially uses of the network that are unknown at the time of the competition for the market likely create windfall profits—reductions in allocative efficiency without corresponding dynamic efficiency gains. Conceptually, this raises the question of how to best separate “true” innovation from network effects that foreclose markets. So far, platforms are not subject to the type of interoperability requirements which would naturally support that distinction.

2. *Amplifying Market Entry Barriers: Data, Algorithms, and Additional Lock-in Effects*

Network effects are not the only source of barriers to entry. First, consider characteristics of data and algorithms.²⁶⁶ The large-scale creation, collection, and processing of data causes high fixed costs and close to zero marginal costs. This creates economies of scale, which describes decreasing average costs with the size of the undertaking. Algorithms are computing rules and, as such, infinitely scalable. Thanks to big data analytics and modern algorithms, data's aggregate value far exceeds the value of their subsets—when data becomes “social data” by means of aggregation

²⁶⁶ See Abrahamson, *supra* note 5.

and combination.²⁶⁷ Large data bases offer comprehensive insights into user preferences and behavioral patterns. Taken together, these insights allow digital platforms to predict and influence user behavior. This enables effective micro targeting through advertisements, tailored product recommendations, and personalized search results. Smaller and especially nascent platforms do not have these possibilities. They do not have access to the same amount and quality of data and, thus, cannot train their algorithms equally well. Data collection on the one hand and product improvements as well as rent extraction on the other hand are mutually reinforcing processes.

Second, the ecosystems that digital platforms have created substantially increases users' switching costs. Amazon offers Prime.²⁶⁸ The Google Play Store and Apple App Store locked their users even tighter into their platforms. After investing up to around \$1,000 in a new smart phone, customers are bound to a specific operating system and, with it, to a specific app store. Especially with Apple, consumers buy into an entire ecosystem that is optimized for internal interoperability between devices and ill-suited for external interoperability with devices of other brands. Google search ties its users in through Android, which features Google as its default search engine and a deal with Apple that ensures the same on iOS. Google also integrates its other popular applications, such as Gmail and Google Calendar, which increases the switching costs for users. Especially privacy concerned users, for example, might feel like they have already given up their data to other Google applications and do not see further harm in using the data hungry search engine.

It is crucial to note that the framework for innovation and competition in digital markets is constructed by law. True, the mechanisms causing the network effects and the characteristics of data and algorithms are factual. Yet, the attribution of their affordance and the privatization of their value remains an inherently political and legal choice. As in IP law,

²⁶⁷ Dirk Bergemann et al., *The Economics of Social Data* 2, 4 (Cowles Found., Discussion Paper No. 2203, 2020).

²⁶⁸ Khan, *supra* note 10, at 750–53.

with its exclusive rights that create monopolies to incentivize innovation, this choice might support innovation or not—in any case it is political and deliberate. Antitrust and, specifically, the essential facilities doctrine defines the level of monopolization and drag on allocative efficiency that we tolerate to incentivize innovation. More broadly, they also determine the concentration of political power that we trade for incentives for innovation during the period of competition for the market.

II. THE ESSENTIAL FACILITIES DOCTRINE FROM ST. LOUIS TO SILICON VALLEY

The story of the essential facilities doctrine in U.S. case law begins with a railroad terminal association in St. Louis that acquired a (local) monopoly for freight traffic across the Mississippi River. In *United States v. Terminal Railroad Association*, a unanimous Supreme Court required the Association to grant competing railroad companies access to its bottleneck facilities to enable access to critical markets.²⁶⁹ The Court refrained from defining specificities of the remedy and instead threatened divestiture to induce the parties to negotiate equitable terms of access. Over the course of the following decades, the idea of mandating access to practically irreplicable bottlenecks gained steam. Yet, almost one hundred years later, in 2004, the Supreme Court brought the essential facilities doctrine to an effective halt in *Trinko*²⁷⁰—before it could reach Silicon Valley’s digital infrastructure.²⁷¹ The Court unanimously²⁷² dismissed a section 2 claim by Curtis Trinko, an AT&T Customer, who asserted that he had been disadvantaged by Verizon, the company which owned the infrastructure that AT&T used to provided its retail services.²⁷³ After

²⁶⁹ *United States v. Terminal R.R. Ass'n*, 224 U.S. 383 (1912).

²⁷⁰ Waller, *supra* note 48, at 365. (“Despite this part of *Trinko* constituting dicta, all subsequent essential facilities doctrine cases denominated as such have been unsuccessful either because of the regulated nature of the facility under question or the failure of the plaintiff to satisfy one of the traditional MCI standards for the doctrine.”)

²⁷¹ Allensworth, *supra* note 34, at 599–601.

²⁷² Justice Stevens filed a concurring opinion, with Justices Souter and Thomas joining, in which he rejected the plaintiff's standing due to a lack of direct injury. *Verizon Commc'ns, Inc. v. Law Offices of Curtis V. Trinko, LLP*, 540 U.S. 398, 417 (2004).

²⁷³ *Id.* at 404.

discussing some of the case law generally associated with the essential facilities doctrine,²⁷⁴ Justice Scalia, wrote for the Court: “We have never recognized such a doctrine, and we find no need either to recognize it or to repudiate it here.”²⁷⁵

Over the course of the development of the essential facilities doctrine, from *Terminal Railroad Association* to *Trinko*, the resulting duty to deal according to conditions directly or indirectly imposed by a state entity had remained an exception to general antitrust principles.²⁷⁶ But how rare exactly should this exception be? The answer to this question has shifted significantly over time and, arguably, reached an extreme. Today, the assumption of access rights that necessarily entail an element of a duty to deal has become so distant that it all but vanished from the canon of antitrust remedies. Yet, harm always occurs where no sufficient alternatives remain in the marketplace,²⁷⁷ a condition independent railroad companies in St. Louis in the early 20th century were as aware of as independent vendors on digital platforms are today.

A. The Development of an Idea Driven by the Courts

The Supreme Court’s 1912 decision in *Terminal Railroad Association* followed several acquisitions of all relevant connections crossing the Mississippi River by a joint venture of various railroad companies. Originally, several, independent connections allowed for railway-based transport of goods across the Mississippi, including a toll bridge and a ferry link. Over the years preceding trial, the Terminal Railroad Association acquired and operated all relevant connections. It became the gatekeeper of a bottleneck for train-based commerce crossing the Mississippi in the greater St. Louis area. As St. Louis was a major hub and the gateway for commerce between East and West, the bottleneck impacted the

²⁷⁴ *Id.* at 408–10.

²⁷⁵ *Id.* at 410–11 (citations omitted).

²⁷⁶ See E. States Retail Lumber Dealers’ Ass’n v. United States, 234 U.S. 600, 614 (1914); United States v. Colgate & Co., 250 U.S. 300, 307 (1919).

²⁷⁷ *E. States*, 234 U.S. at 614.

economy far beyond the city. Not least due to St. Louis' geography, constructing additional, alternative crossings would have required prohibitively large investments. As the result, the independent competitors "were compelled either to desist from carrying on interstate commerce, or to do so upon the terms imposed by the proprietary companies."²⁷⁸ These terms included "the imposition of the arbitrary hauling charge imposed upon the artificially limited trade districts described."²⁷⁹ The government "urged a dissolution of the combination between the terminal company" and the previously independent toll bridge and ferry company to restore competition in the primary infrastructure market.²⁸⁰ The Court did not follow suit. Instead of breaking up the facility, the Court mandated that the Terminal Railroad Association provides for the admission of actual and potential competitors upon "just and reasonable terms and regulations as will, in respect of use, character, and cost of service, place every such company upon as nearly an equal plane as may be with respect to expenses and charges as that occupied by the proprietary companies."²⁸¹

In weighing possible remedies, the Court expressly recalled its assertion in *Standard Oil Company* that "one of the fundamental purposes of the statute is to protect, not to destroy, rights of property."²⁸² The decision follows two separate, but related lines of argumentation. One relates to the Court choosing a measure that impedes the notion of property rights to a lesser degree than a "complete disjoiner."²⁸³ The other relates to concerns of public policy rooted in the specific geographical situation in St. Louis. Justice Lurton, writing for the Court, describes the uniquely limiting topographical situation of St. Louis in detail, with the Mississippi River in the east and "great hills which hug the river closely and rapidly

²⁷⁸ *United States v. Terminal R.R. Ass'n*, 224 U.S. 383, 410 (1912).

²⁷⁹ *Id.*

²⁸⁰ *Id.* at 409.

²⁸¹ *Id.* at 411.

²⁸² *Id.* at 409; *Standard Oil Co. of New Jersey v. United States*, 221 U.S. 1, 78 (1911).

²⁸³ *Terminal R.R. Ass'n*, 224 U.S. at 412 ("[A break-up] may be necessary unless one equally adequate can be applied.").

recede to the west.”²⁸⁴ He concludes that “as a practical matter, [it is] impossible for any railroad company to pass through, or even enter St. Louis, so as to be within reach of its industries or ‘commerce, without using the facilities entirely controlled by the terminal company.’”²⁸⁵ In this regard, the decision directly quotes from the Association’s brief which acknowledged the dependence of other companies on its facilities, due to prohibitive costs associated with duplicating infrastructure.²⁸⁶ Building on that assertion, Justice Lurton clarifies that the exclusive dependency of other companies does not ultimately stem from St. Louis’ topography as a law of nature.²⁸⁷ Instead, it follows from the consolidation of the existing infrastructure, which created efficiencies that competing systems could not have afforded.²⁸⁸

As it relates to public policy, the Association stressed the goal to avoid a waste of scarce land for additional terminals and parallel tracks as a precondition for competition on the infrastructural level in their argumentation.²⁸⁹ Justice Lurton implicitly embraced this public policy concern; he clarified that the mere combination of transit capacities did not violate the antitrust laws by quoting, at length, from a prior Missouri Supreme Court ruling concerning the same Association, which worried that a hypothetical requirement for every railroad to build their own bridge would “cut [the city] to pieces.”²⁹⁰ After all, as it strongly relies on

²⁸⁴ *Id.* at 396–97.

²⁸⁵ *Id.* at 397.

²⁸⁶ *Id.* at 397 (“There indeed is compulsion, but it is inherent in the situation. The other companies use the terminal properties because it is not possible to acquire adequate facilities for themselves. The cost to any one company is prohibitive.”).

²⁸⁷ *Id.*

²⁸⁸ *Id.* at 397–98. (“Obviously, this was not true before the consolidation of the systems of the Wiggins Ferry Company and the Merchants’ Bridge Company with the system theretofore controlled by the terminal company. That the nonproprietary companies might have been compelled to use the instrumentalities of one or the other of the three systems then available, and that the advantages secured might not have been so great as those offered by the unified system now operated by the terminal company, must be admitted.”)

²⁸⁹ *Id.* at 387–88.

²⁹⁰ *Id.* at 402–04 (“Suppose it were required of every railroad company to effect its entrance to the city as best it could and establish its own terminal facilities, we would

the combination of transit capacities, the Court's decision could also be interpreted as behavioral remedy to an otherwise anti-competitive merger, in the form of a common law predecessor to the Clayton Act of 1914.

In the decades following the *Terminal Railroad Association* decision, courts have applied the essential facilities doctrine in various situations and refined it. In *Associated Press*, the Court again grappled with the exclusionary behavior of an association of companies. The government accused the news aggregator, Associated Press (AP), of violating sections 1 and 2 of the Sherman Act: The AP "had by concerted action set up a system of By-Laws which prohibited all AP members from selling news to non-members, and which granted each member powers to block its non-member competitors from membership."²⁹¹ The Court dismissed AP's defense that the government failed to provide evidence of AP's "indispensability" to independent newspapers.²⁹² Instead, a competitive advantage for members versus a disadvantage for nonmembers, respectively, suffices as a basis for the government's claim for relief.²⁹³

Notably, the Supreme Court also vigorously rejected an interpretation of the First Amendment that would shield newspapers from antitrust enforcement: "Freedom to publish is guaranteed by the Constitution, but freedom to combine to keep others from publishing is not."²⁹⁴ This understanding lives on and is crucial to the application of the essential facilities doctrine to digital platforms. It must continue to prevail because then and now, "a command that the government itself shall not

have a large number of passenger stations, freight depots, and switch yards scattered all over the vast area, and innumerable vehicles employed in hauling passengers and freight to and from those stations and depots. Or suppose it became necessary in the exigency of commerce that all incoming trains should reach a common focus, but every railroad company provide its own track; then not only would the expense of obtaining the necessary rights of way be so enormous as to amount to the exclusion of all but a few of the strongest roads, but, if it could be accomplished; the city would be cut to pieces with the many lines of railroad intersecting it in every direction, and thus the greatest agency of commerce would become the greatest burden." (quoting State ex inf. Att'y Gen. v. Terminal Ass'n of St. Louis, 81 S.W. 395, 398 (Mo. 1904)).

²⁹¹ *Associated Press v. United States*, 326 U.S. 1, 4 (1945).

²⁹² *Id.* at 18.

²⁹³ *Id.* at 17–18.

²⁹⁴ *Id.* at 20.

impede the free flow of ideas does not afford non-governmental combinations a refuge if they impose restraints upon that constitutionally guaranteed freedom.”²⁹⁵

Only 6 years later, the Supreme Court once more found itself engaged with the media sector in *Lorain Journal*.²⁹⁶ The sole daily newspaper in an Ohio municipality “refused to accept local advertisements . . . from any Lorain County advertiser who [also] advertised or who appellants believed to be about to advertise” over a local radio station.²⁹⁷ The Court recognized a duty to deal with the “indispensable medium of advertising for many Lorain concerns” and forced the journal to accept advertisements from advertisers that also ran commercials on the radio station.²⁹⁸ Notably, *Lorain Journal* is not based on prior consolidation, as was the case in *Terminal Railroad Association and Associated Press*.

In 1952, the First Circuit mandated in *Gamco* that the operator of a wholesale produce market re-admit a tenant who had been ousted.²⁹⁹ The court rejected the defendant’s argument that the former tenant grocer had alternative means to reach the end-consumer market, as pursuing these means would have put the grocer at a significant disadvantage.³⁰⁰ In doing so, the court refined the prerequisites for liability, namely as it relates to the practical reasonableness of the alternatives to the facility in question.³⁰¹

Finally in 1977, the D.C. Circuit Court became the first to rely on the essential facilities doctrine by name in *Hecht*; the court equated it with the “bottleneck principle.”³⁰² The dispute raised the question whether an exclusive contract between the operator of a football stadium in D.C. and a team violated sections 1 and 2 of the Sherman Act and whether the

²⁹⁵ *Id.*

²⁹⁶ *Lorain Journal Co. v. United States*, 342 U.S. 143 (1951).

²⁹⁷ *Id.* at 148.

²⁹⁸ *Id.* at 157–59.

²⁹⁹ *Gamco, Inc. v. Providence Fruit & Produce Bldg., Inc.*, 194 F.2d 484 (1st Cir. 1952).

³⁰⁰ *Id.* at 487.

³⁰¹ *Id.* at 487–88.

³⁰² *Hecht v. Pro-Football, Inc.*, 570 F.2d 982, 992 (D.C. Cir. 1977).

operator of a football stadium in D.C. must grant a prospective rival team access to that stadium.³⁰³ The court vacated the preceding district court ruling due to insufficient jury instructions and opined that for a duty to deal to exist “a facility need not be indispensable; it is sufficient if duplication of the facility would be economically infeasible and if denial of its use inflicts a severe handicap on potential market entrants.”³⁰⁴ At the same time, any sharing obligations find their limits where “such sharing would be impractical or would inhibit the defendant’s ability to serve its customers adequately.”³⁰⁵ By clarifying the appropriate jury instructions on the essential facility claim, Judge Wilkey implicitly defined the conditions for liability under the essential facilities doctrine.³⁰⁶

The fact-specific and somewhat indirect articulation of the essential facility claim in *Hecht* was followed by *MCI Communications*, in which the Seventh Circuit famously established a generalized version of the four-prong test: “(1) control of the essential facility by a monopolist; (2) a competitor’s inability practically or reasonably to duplicate the essential facility; (3) the denial of the use of the facility to a competitor; and (4) the feasibility of providing the facility.”³⁰⁷ In determining the feasibility of providing the facility, the fourth prong acknowledges legitimate business justifications for the denial of access.³⁰⁸ In its reasoning, the court leans on the existing case law and specifically references *Hecht*. On substance, *MCI Communications* featured a refusal to deal by the telecom incumbent AT&T. The owner and operator of telecommunication infrastructure “refused to interconnect MCI with the local distribution facilities.”³⁰⁹

³⁰³ *Id.* at 987–88. For a remarkably similar setting, in which the Seventh Circuit applied then available Aspen ruling, see *Fishman v. Estate of Wirtz*, 807 F.2d 520 (7th Cir. 1986).

³⁰⁴ *Hecht*, 570 F.2d at 992.

³⁰⁵ *Id.* at 992–93.

³⁰⁶ *Id.* at 993.

³⁰⁷ *MCI Commc’ns Corp. v. Am. Tel. & Tel. Co.*, 708 F.2d 1081, 1132–33 (7th Cir. 1983).

³⁰⁸ *Illinois ex rel. Burris v. Panhandle E. Pipe Line Co.*, 935 F.2d 1469, 1483 (7th Cir. 1991).

³⁰⁹ *MCI Commc’ns*, 708 F.2d at 1132.

In *Aspen Skiing*, the Supreme Court picked up the ball, again. Three independent companies ran four skiing resorts in Aspen, Colorado. Each resort sold both individual tickets to their respective lifts and so-called area tickets (all-Aspen tickets), which enabled skiers to use the facilities of all four resorts. After acquiring one of the competitors and opening a new skiing area, Aspen Skiing Company, the largest conglomerate of the resorts, insisted on changing the allocation of revenue from the area tickets to the disadvantage of the smaller independent resort, Aspen Highlands Skiing Corporation. As Highlands refused to accept that change, the conglomerate discontinued the all-Aspen ticket. Highlands filed a treble damages action and the trial court awarded the damages sought. The Tenth Circuit affirmed, and so did the Supreme Court. Any limitations of the right to refuse a deal need to clear a high bar under *Aspen*.

Heavily leaning on the precedent established in *Lorain Journal*, the Court stressed that “[t]he high value [of] the right to refuse to deal with other firms does not mean that the right is unqualified.”³¹⁰ In fact, based on the reduction of quality in resulting consumer products, which no longer included an all-Aspen ticket, and the detrimental impact on Highlands ability to compete in the marketplace, the Court found Aspen Skiing Company’s refusal to deal anticompetitive.³¹¹ Moreover, the Court did not recognize any justifiable business rationale, but, instead, found that the defendant was motivated solely by a desire to harm its smaller competitor.³¹² *Aspen Skiing* was widely criticized in the literature. In fact, many—erroneously—understood *Aspen* as a dire warning of what an expansive essential facilities doctrine would look like in practice. Lower courts applied the *Aspen* ruling but did not expand it in any meaningful way.³¹³ Yet, in the larger context, the landmark decision marked a high point for the essential facilities doctrine. From thereon, the

³¹⁰ *Aspen Skiing Co. v. Aspen Highlands Skiing Corp.*, 472 U.S. 585, 601–05 (1985).

³¹¹ *Id.* at 605–08.

³¹² *Id.* at 608–10.

³¹³ *Fishman v. Estate of Wirtz*, 807 F.2d 520, 539 (7th Cir. 1986); *Alaska Airlines v. United Airlines*, 948 F.2d 536 (9th Cir. 1991); *Ex rel. Burris*, 935 F.2d at 1481-83.

doctrine's decline began—much to the detriment of businesses that rely on access to crucial infrastructure.

Since its inception, the essential facilities doctrine has captured a basic idea: if an entity controls a facility that is necessary for other businesses to compete effectively in the marketplace, that entity must grant its competitor access to the facility. Though, over time, some of the leading considerations, and their emphasis has evolved. The notion of equal access to the marketplace and creating a level playing field stretch through the decisions.³¹⁴ It would prove prohibitively expensive for competitors to create their own facilities, or, at least, would put them at a significant disadvantage.³¹⁵ In *Terminal Railroad Association*, the Court presented its remedy as less intrusive³¹⁶ to the defendant and a function of external limitations to re-establishing competition.³¹⁷ The emphasis on the monopolist's intent to monopolize varied over time: the reason to focus on the defendant's intent generally shifted from carrying the argument to merely providing evidence of the anti-competitive nature of the conduct in question.³¹⁸ Infrastructure theory provides an alternative foundation. Where a privately owned facility functionally serves as an equivalent of a classic public good or service, it ought to be treated as such. Another strain of reasoning leans on notions of reliance: this appears central, when the Court emphasizes the termination of existing commercial relations without plausible economic rationale, as in *Aspen Skiing* and, later, to confine the doctrine, in *Trinko*.³¹⁹ Moreover, moral

³¹⁴ *Gamco, Inc. v. Providence Fruit & Produce Bldg., Inc.*, 194 F.2d 484, 487 (1st Cir. 1952).

³¹⁵ *Id.*

³¹⁶ Reiffen & Kleit, *supra* note 5, at 432.

³¹⁷ *United States v. Terminal R.R. Ass'n*, 224 U.S. 383, 409–12 (1912).

³¹⁸ See *Aspen Skiing Co. v. Aspen Highlands Skiing Corp.*, 472 U.S. 585, 602–03 (1985) (focusing on intent as a requisite condition); *Terminal R.R. Ass'n*, 224 U.S. at 395 (same); *United States v. Aluminum Co. of America*, 148 F.2d 416, 432 (2nd Cir. 1945) (same). But see *United States v. Microsoft Corp.*, 253 F.3d 34, 59 (2nd Cir. 2001) (focusing on intent as evidence of anticipated effects). In *Trinko*, the Court does not mention intent. *Verizon Commc'n Inc. v. Law Offices of Curtis V. Trinko, LLP*, 540 U.S. 398 (2004).

³¹⁹ *Aspen Skiing*, 472 U.S. at 604–08; *Trinko*, 540 U.S. at 409.

justifications of participation and checks on private power may lead to the same conclusions.

B. *The Decline of an Idea and Digital Platforms*

Following the arguments of influential legal movements “that demanded a new kind of rule of the market” and embraced a “market supremacy,”³²⁰ the tide started to shift against the essential facilities doctrine. In the shadow of the economic shift to the right heralded in by the Reagan administration and continued throughout the 1990’s, the intellectual seeds of the extreme anti-enforcement Chicago School of antitrust³²¹ flourished. The somewhat more moderate Harvard School of antitrust converted the Chicago School’s scathing criticism of antitrust enforcement against unilateral conduct and, specifically, the essential facilities doctrine, into a more digestible form. Concerns about incentives for dynamic innovation, trust in the self-correcting mechanisms of markets, denials of the very existence of incentives to monopolize adjacent markets, and dire assessments of the ability of the courts and agencies to replace market mechanisms took center stage. In the words of Spencer Weber Waller, “[Philip E.] Areeda succeeded in making the essential facilities doctrine a dirty word in antitrust.”³²² The courts eagerly picked up the bait.³²³ Tim Wu rightly identifies “an unfortunate trend in the antitrust law, one best described as the tendency to elevate theory over evidence.”³²⁴ He describes the irony that the movement started as an endeavor to bring more economic rigor into the courtroom, now, ironically

³²⁰ Britton-Purdy et al., *supra* note 45, at 1796.

³²¹ The Chicago School of antitrust built on classic libertarian thinkers, including Friedrich Hayek and Milton Friedman, and formed around controversial lawyers: most famously, Robert Bork and Alan Director. See Herbert J. Hovenkamp & Fiona Scott Morton, *Framing the Chicago School of Antitrust Analysis*, 168 U. PA. L. REV. 1843 (2020).

³²² Waller, *supra* note 48, at 366.

³²³ *Trinko*, 540 U.S. at 410–11; *Twin Labs., Inc. v. Weider Health & Fitness*, 900 F.2d 566, 569 (2nd Cir. 1990).

³²⁴ Tim Wu, *The American Express Opinion, the Rule of Reason, and Tech Platforms*, 7 J. ANTITRUST ENFT 117, 117 (2019).

turns on mounting evidence of monopolization and abuses of power.³²⁵ This doctrinal approach to unilateral conduct finds itself detached from reality and modern economic theory.³²⁶

The rollback of the essential facilities doctrine commenced with a stricter delineation of its boundaries. In *Illinois v. Panhandle Eastern Pipe-line*, the Seventh Circuit took a very narrow view of a competitor's inability to duplicate essential facilities. The court accepted the district court's view that it "would have been economically feasible for competitors to duplicate much of Panhandle's system within central Illinois by means of interconnections between competing pipelines and the construction of new pipelines."³²⁷ Panhandle's long-lasting contracts with suppliers contained so-called take-or-pay provisions, which obliged the company to pay compensation if it did not accept delivery of the gas. Remarkably, the Seventh Circuit also accepted the resulting contractual liability as a legitimate business justification not to share the pipeline.³²⁸ In effect, this allows a company to avoid liability by locking itself into long-term contractual obligations. It creates incentives for more intensive market foreclosure.

In *Alaska Airlines v. United Airlines*, the Ninth Circuit labeled *Otter Tail*—a case in which the Supreme Court required that a standalone utility company grant a municipality access to its power grid so that it could distribute electricity³²⁹—an outlier in the Supreme Court's jurisprudence—and cautioned against applying the essential facilities doctrine to single firm contexts without qualifications.³³⁰ While numerically correct, nothing on substance suggested treating *Otter Tail* as an outlier. The court also raised the bar for liability as it required the controller of the alleged essential facility to "eliminate the potential for competition," before the

³²⁵ *Id.* at 117–18. See Hovenkamp & Scott Morton, *supra* note 321, at 1848–52.

³²⁶ *Id.* at 1848–52.

³²⁷ *Illinois ex rel. Burris v. Panhandle E. Pipe Line Co.*, 935 F.2d 1469, 1482–83 (7th Cir. 1991).

³²⁸ *Id.* at 1483–85.

³²⁹ *Otter Tail Power Co. v. United States*, 410 U.S. 366 (1973).

³³⁰ *Alaska Airlines v. United Airlines*, 948 F.2d 536, 542–46 (9th Cir. 1991).

doctrine creates access rights.³³¹ This meant a further restriction from the earlier requirement of a “severe handicap” on competitors,³³² which itself is stricter than the “adverse impact” on the ability of the petitioner to compete set forth by the Supreme Court in *Aspen*.³³³

The biggest blow to the practical impact of the essential facilities doctrine did not come until 2004, when the Supreme Court all but formally disowned the idea of curbing gatekeepers’ power in *Trinko*.³³⁴ Instead of overruling precedent, the Court in *Trinko*, performed the deepest of a thousand cuts.³³⁵ Curiously, the Court articulated the doctrine’s scathing criticism in dicta.³³⁶ The Court declared that “*Aspen Skiing* is at or near the outer boundary of § 2 [of the Sherman Act] liability.”³³⁷ Justice Scalia interpreted the duty to deal articulated in *Aspen Skiing* as confined to a setting in which “[t]he unilateral termination of a voluntary (*and thus presumably profitable*) course of dealing suggested a willingness to forsake short-term profits to achieve an anticompetitive end.”³³⁸ Of the essential facilities doctrine, he writes that it had never been recognized by the Court.³³⁹ This observation is true insofar as the doctrine had not been named in any of the Court’s previous decisions. However, *Aspen Skiing* and *Otter Tail* had been widely understood as reflecting the idea of the essential facilities doctrine and vice versa. And the Supreme Court is generally credited with creating the doctrine in *Terminal Railroad Association*.

³³¹ *Id.* at 544–45.

³³² *Twin Laboratories, Inc. v. Weider Health & Fitness*, 900 F.2d 566, 568–69 (2nd Cir. 1990). The D.C. Circuit relied on the same standard before *Aspen*. See *Hecht v. Pro-Football, Inc.*, 570 F.2d 982, 992 (D.C. Cir. 1977).

³³³ *Aspen Skiing Co. v. Aspen Highlands Skiing Corp.*, 472 U.S. 585, 585 (1985).

³³⁴ *Verizon Commc’ns Inc. v. Law Offices of Curtis V. Trinko, LLP*, 540 U.S. 398, 410–11 (2004); *Allensworth*, *supra* note 34 599–601 (2021) (describing the impact of *Trinko* on antitrust enforcement against the technology sector); *Frischmann & Waller*, *supra* note 5, at 9.

³³⁵ *Frischmann & Waller*, *supra* note 5, at 8–10. (describing “[t]he counterattack against the essential facilities doctrine as “Death by a Thousand Cuts”).

³³⁶ *Id.* at 9.

³³⁷ *Trinko*, 540 U.S. at 409.

³³⁸ *Id.* The decision included a similar remark about *Otter Tail*, in which the defendant conducted business with some, but not others. See *id.* at 410; *Otter Tail Power Co. v. United States*, 410 U.S. 366, 366 (1973).

³³⁹ *Trinko*, 540 U.S. at 411.

The other element in *Trinko* further diminishing the impact of the essential facilities doctrine concerns the relationship between antitrust liability and sector specific regulation. In *Otter Tail*, the Supreme Court established a rule-exception relationship in favor of the applicability of antitrust law and, thus, the essential facilities doctrine.³⁴⁰ Under *Otter Tail*, a defendant is not exempt from antitrust scrutiny only because its activities are subject to a regulatory agency's jurisdiction.³⁴¹ Without overruling *Otter Tail*, the Court reversed that rule-exception relationship to its opposite in *Trinko* and, in effect, exempted regulated businesses from antitrust claims.³⁴² Put differently, *Otter Tail* remains on the books, but is confined to the specific facts of the case. Without further basis, courts now assume that Congress intends to pre-empt antitrust law when regulating a sector of the industry. And antitrust law's function as a gap filler remains ignored. That said, digital platforms cannot expect shelter from this carve-out. By and large, digital commerce remains unregulated. Even emerging privacy regulation, such as the California Consumer Privacy Act (and, soon the California Privacy Rights Act of 2020), does not provide an equivalent to the type of access rights on which the *Trinko* carve-out rests in the telecommunications context.³⁴³

While the *Trinko* decision practically muted claims based on the notion of access rights, more recent case law specifically addresses two-sided markets, whose characteristics define the digital platforms markets,³⁴⁴ and shapes the environment for potential future cases. Consider the Supreme Court's ruling in *American Express*.³⁴⁵ The credit card provider's business model rests on a high fee, high reward concept: American Express lures especially wealthy credit card users with high rewards

³⁴⁰ *Otter Tail*, 410 U.S. at 372–75.

³⁴¹ *Id.*

³⁴² *Verizon Commc'n Inc. v. Law Offices of Curtis V. Trinko, LLP*, 540 U.S. 398, 411–12 (2004).

³⁴³ *Id.* at 411.

³⁴⁴ Namely, these characteristics include network effects. For a description of the impact of network effects on digital markets, see part I.B.1, *supra* notes 240–255 and accompanying text.

³⁴⁵ *Ohio v. Am. Express Co.*, 138 S. Ct. 2274 (2018).

and attractive perks, at the expense of high transaction fees for merchants on the other side of the market—a classic pricing strategy in two-sided markets.³⁴⁶ In this environment, merchants might try to steer customers towards other payment methods by offering price discounts or additional services, like free shipping. The government alleged that American Express engaged in anticompetitive monopolization by requiring merchants to accept a contractual antisteering provision³⁴⁷ which “prohibits merchants from discouraging customers from using their Amex card.”³⁴⁸ As merchants cannot afford to forgo sales from American Express users, the antisteering clause limited the fee-based competition between credit card providers. This restraint has led to higher transaction fees for merchants, which translates to higher prices for their customers.

The Court dismissed the government’s case on the grounds that the government failed to provide sufficient evidence of harm.³⁴⁹ In its first comprehensive assessment of the issue,³⁵⁰ the Court raised the bar for claims against two-sided transaction platforms in three notable ways. First, the majority demanded that the government provides evidence for harm in the overall market for credit card transactions. Harm on one side of the market, namely the side of the merchants, does not suffice. Thus, increased fees for merchants and resulting higher prices for consumers do not, in themselves, support the government’s claim. Second, and to some extent intertwined with the first point, the Court practically required plaintiffs to prove all potential effects of American Express’ provisions in one step. The majority claimed that it would follow the established approach: (1) “the initial burden to prove that the challenged restraint has a substantial anticompetitive effect that harms consumers in the relevant market” lies with the plaintiff; (2) “then the burden shifts to the defendant to show a procompetitive rationale for the restraint;” (3)

³⁴⁶ See Rochet & Tirole, *supra* note 46, at 990–94.

³⁴⁷ *Am. Express*, 138 S. Ct. at 2284.

³⁴⁸ *Id.* at 2279.

³⁴⁹ *Id.* at 2287.

³⁵⁰ Geoffrey A. Manne, *In Defence of the Supreme Court’s ‘Single Market’ Definition in Ohio v American Express*, 7 J. ANTITRUST ENFT 104, 104 (2019).

"then the burden shifts back to the plaintiff to demonstrate that the pro-competitive efficiencies could be reasonably achieved through less anti-competitive means."³⁵¹ By defining the relevant market as an all-encompassing market for credit card transactions, the Court practically reduced the three-step framework to a single step. In effect, the majority's approach forces the plaintiff to provide a full proof upfront, as Justice Breyer points out in the dissent.³⁵² Third, for no convincing reason, the majority went so far as to even reject evidence of harm in the overall market for credit card transactions.³⁵³ When dismissing the price increases as insufficient evidence of consumer harm absent a factually measurable reduction in output, the majority ignores the appropriate hypothetical alternative: functioning competition.³⁵⁴

While the Supreme Court's ruling in *American Express* creates further obstacles to antitrust enforcement in general, thus far, it is unclear to what extent the Court's conceptualization of two-sided markets applies to digital platforms.³⁵⁵ Earlier this year, the District Court for the District of Delaware rejected the Department of Justice's argument that the reasoning in *American Express* was limited to the credit card industry.³⁵⁶ Though in *American Express*, the Supreme Court expressly singled out "two-sided transaction platforms"³⁵⁷ and distinguished between markets on which "the impacts of indirect network effects and relative pricing in that market are minor."³⁵⁸ For example, the court notes that markets with minor network effects include newspapers that rely on advertising revenue, suggesting that *American Express* might not apply to markets for

³⁵¹ *Am. Express*, 138 S. Ct. at 2284.

³⁵² *Id.* at 2303–04.

³⁵³ *Id.* at 2288.

³⁵⁴ *Id.* at 2302.

³⁵⁵ Wu, *supra* note 324, at 118–19.

³⁵⁶ *United States v. Sabre Corp.*, No. CV 19-1548-LPS, 2020 WL 1855433, at *33 (D. Del. Apr. 7, 2020), *vacated*, No. 1-19-cv-01548 (3d Cir. July 20, 2020) (vacating without expressing an opinion on the merits of the parties' dispute).

³⁵⁷ *Ohio v. Am. Express Co.*, 138 S. Ct. 2274, 2286 (2018). ("But two-sided transaction platforms, like the credit-card market, are different. These platforms facilitate a single, simultaneous transaction between participants.")

³⁵⁸ *Id.*

newspapers. Tim Wu rightly suggests that this can only be understood to mean that the major advertisement financed communication platforms do not fall under the Court's approach in *American Express*.³⁵⁹ Building on Wu's notion of advertisement-financed Big Tech as Attention Merchants,³⁶⁰ John Newman provides a helpful alternative conceptualization: one might understand the entire market as a vertical distribution system for attention.³⁶¹ Thus, it can be inferred that the Court's holding in *American Express* cannot apply to advertising-based digital platforms by its own economic logic.

For e-commerce platforms, however, these limitations of *American Express* offer limited solace. Consider two examples. On the one hand, Amazon Marketplace brings buyers and sellers together and, at its core, represents the prototype of a two-sided transaction platform under *American Express*.³⁶² On the other hand, Google's general search engine and Facebook's social media platforms should clearly fall out of *American Express'* scope as it is mainly funded through contextual and behavioral advertisement. The case is less clear for paid ad placements on Google's site that are displayed as search results. In this context, courts might argue that Google, in fact, directly facilitates transactions between end users and advertisers. The application of the court's approach to app stores appears equally unclear. Both the Google Play store and the Apple App Store feature elements of two-sided transaction platforms and the type of advertisement funded markets that the Court distinguished in *American Express*. Some apps are offered for "sale" or as a subscription model and

³⁵⁹ Wu, *supra* note 324, at 123–26.

³⁶⁰ TIM WU, THE ATTENTION MERCHANTS: THE EPIC SCRAMBLE TO GET INSIDE OUR HEADS (2016).

³⁶¹ John M. Newman, *Antitrust in Attention Markets* 13–14 (U. Miami Sch. L., Working Paper No. 3745839, 2021). In addition, Wu notes that the Court implicitly acknowledges the concept of markets for attention. See Wu, *supra* note 324, at 124.

³⁶² Cf. Wu, *supra* note 324, at 125 ("A firm like Amazon might seem at first like a closer case, given that the e-commerce giant clearly facilitates transactions between its users and sellers. That said, it seems clear that the Court in *American Express* could not have intended for every retail operation to be treated as a 'transaction platform' in the meaning of the opinion."). Wu refers to Uber and Lyft as most likely in scope of the decision.

some are free of monetary charges. For the former, the app stores facilitate transactions in the sense of *American Express*. The latter rely on advertisements. Moreover, Apple, charges app providers up to a 30% commission for individual transactions conducted through the Apple ecosystem,³⁶³ for example, which further complicates matters, when combined with advertisement-based funding structures.

Despite its generally limiting impact, *American Express* can support stricter antitrust enforcement in certain cases:³⁶⁴ the Court explains in the context of the market in which harm is to be measured that “[o]nly other two-sided platforms can compete with a two-sided platform for transactions.” Taken literally, this conceptualization inevitably also shapes the market that serves as a basis for market definition analysis in the context of mergers and unilateral conduct that are not subject to “quick-look” review. In fact, the District Court for the District of Delaware already applied the *American Express* logic to a merger review earlier this year.³⁶⁵ As the government feared the merger’s impact on competition, it challenged the merger between Sabre GLBL Inc. and Farelogix Inc., two companies that provide booking solutions to facilitate transactions between airlines and travel agencies. Chief Judge Stark dismissed the challenge based on the notion that the two companies, as a matter of law, do not operate in the same market, and, thus, are not competitors: Sabre is a two-sided platform and caters to both airlines as well as travel agencies; Farelogix only enters into contractual relationships with airlines and gives them the opportunity to directly connect with travel agencies.³⁶⁶ While the Third Circuit Court of Appeals vacated the decision in *Sabre* as the parties abandoned the merger in light of the pandemic, it did not rule on the merits

³⁶³ James Vincent, *Spotify Files Antitrust Complaint Over ‘Apple Tax’*, VERGE (Mar. 13, 2019, 6:50AM EDT), <https://perma.cc/ZAF4-7RSC>.

³⁶⁴ Wu, *supra* note 324, at 126.

³⁶⁵ United States v. Sabre Corp., No. CV 19-1548-LPS, 2020 WL 1855433, at *32-38 (D. Del. Apr. 7, 2020), *vacated*, No. 1-19-cv-01548 (3d Cir. July 20, 2020) (vacating without expressing an opinion on the merits of the parties’ dispute).

³⁶⁶ *Id.* at *34. This, the District Court argues, does allow Sabre to circumvent section 7 of the Clayton Act. Instead, it forces the government to provide evidence of harm on both sides of the market.

and the reasoning behind the decision might well prevail in future cases.³⁶⁷

As the *American Express* analysis leads to narrow market definitions in a merger setting, it may lend itself to the same result in the essential facilities-context.³⁶⁸ As applied to e-commerce and Amazon's marketplace, the logic would suggest that the relevant market is the market for facilitating transactions between merchants and end consumers on the internet. Fully vertically integrated online retailers, such as Target or various clothing brands, would not be counted as competitors. Amazon's retail arm could either be treated as another customer of Amazon Marketplace or left out of the calculation entirely. This interpretation is in line with earlier case law.³⁶⁹ The Supreme Court focused on the competitive impact of access of newspapers to information aggregated by the AP in *Associated Press* and remained unconcerned about potential alternative routes of the same information to readers or the local markets for newspapers.³⁷⁰ In *Lansdale v. Philadelphia Electric Co.*, the Third Circuit deemed the retail market for electricity irrelevant to assess a city's claim to access a utility's company infrastructure and focused on the wholesale market for electricity instead.³⁷¹ The First Circuit in *Gamco* equally focused on the access to wholesale facilities to sell produce and not the condition of the respective end consumer market or theoretical substitutes.³⁷² In *Drinkwine v. Federated Publications Inc.*, the Ninth Circuit focused on the right of an advertisement brochure publisher to be included in the distribution of the local newspaper, instead of concentration in the market for local advertisements.³⁷³ In fact, access to infrastructure at a wholesale level also

³⁶⁷ United States v. Sabre Corp., No. 1-19-cv-01548, 2020 WL 4915824, at *1-2 (3d Cir. July 20, 2020).

³⁶⁸ See Wu, *supra* note 324, at 126.

³⁶⁹ Lipsky & Sidak, *supra* note 48, at 1214.

³⁷⁰ *Associated Press v. United States*, 326 U.S. 1, 17–18 (1945).

³⁷¹ *Borough of Lansdale v. Phila. Elec. Co.*, 692 F.2d 307, 312 (3d Cir. 1982). See Lipsky & Sidak, *supra* note 48, at 1214.

³⁷² *Gamco, Inc. v. Providence Fruit & Produce Bldg., Inc.*, 194 F.2d 484, 487 (1st Cir. 1952).

³⁷³ *Drinkwine v. Federated Publ'ns, Inc.*, 780 F.2d 735, 740 (9th Cir. 1985). See Lipsky & Sidak, *supra* note 48, at 1214.

drove the *Terminal Railroad Association* decision, rather than concerns about concentration in the product markets for the goods transported on the trains.³⁷⁴

The idea of granting competitors access to essential facilities that developed to address bottlenecks in the railway infrastructure in St. Louis has not reached Silicon Valley. As the doctrine stands in light of *Trinko*, it cannot provide the relief from platforms' chokehold that the digital economy so desperately needs. The bar for antitrust liability has become too high. Independent competitors of vertically integrated digital platforms find themselves trapped: they must participate on monopolist platforms to access their customers, but they are also forced to compete with the platform providers—on unfair terms. A highly concentrated market characterized by network effects does not provide alternatives to exploitative platforms and antitrust doctrine does not remedy this market failure. In short, digital platforms have become essential. Their character as infrastructure for digital commerce requires a revival, renewal, and expansion of the essential facilities doctrine.

III. A RENEWED ESSENTIAL FACILITIES DOCTRINE FOR DIGITAL COMMERCE

A revived, renewed, and expanded essential facilities doctrine offers an appropriate remedy to the foreclosure of digital commerce. In economic terms, a new version of the doctrine can optimally balance allocative and dynamic efficiency. It can also guarantee a fundamental notion of fairness in the economy that sits at the core of the legitimacy of the economic system. In a time of historic concentrations of power and wealth, contributions to a more participatory economy can deliver vital impulses. The doctrine's flexibility provides for a well-suited remedy in dynamic market environments, whether these concern railroads or digital platforms. Its general applicability allows it to react to emerging challenges in a functional matter and avoid regulatory gaps.

³⁷⁴ United States v. Terminal R.R. Ass'n, 224 U.S. 383, 393, 397 (1912).

For a renewed essential facilities doctrine, I propose a two-tiered design: at its first level, regulators and courts must bar discrimination and self-preferencing by platforms and create access rights for third parties—a short-run mitigation of harm due to market power. At its second level, after an appropriate amortization period, antitrust enforcers must upend platform-monopolies entirely—a long-run solution. All this does not necessarily require breaking up network infrastructures or destroying network efficiencies. In the following Section, I will first identify lessons from innovation economics in IP, namely that monopolies in the form of exclusive rights, created to incentivize innovation, should be limited both in scope and duration. Second, I will draw from European competition law and, specifically, the EU version of the essential facilities doctrine, which already offers far reaching remedies and the recent proposal for a Digital Markets Act. Third, I will explain how the two-tiered approach can be applied to platforms and how it creates sustainable incentives for innovation. Fourth, I will lay out a recalibrated understanding of the potential error costs triggered by the implementation of a revived, renewed, and expanded essential facilities doctrine.

A. Lessons in Innovation Policy from Intellectual Property Law

Through law, we construct markets and define the competitive landscape.³⁷⁵ As Karl Polanyi put it, in a twist of historical irony, especially “[l]aissez-faire was planned.”³⁷⁶ And as we construct markets, we constantly decide on the levels of monopolization in the economy, the incentives for innovation, and the accessibility of resources. Sometimes this decision results from an express and deliberate policy decision—as in the case of antitrust and various areas of sector-specific regulation;

³⁷⁵ KATHARINA PISTOR, THE CODE OF CAPITAL: HOW THE LAW CREATES WEALTH AND INEQUALITY 2–8, 10, 43–44 (2019).

³⁷⁶ KARL POLANYI, THE GREAT TRANSFORMATION: THE POLITICAL AND ECONOMIC ORIGINS OF OUR TIME 147 (2d ed. 2001) (pointing to the historic development of supposedly free markets: “While laissez-faire economy was the product of deliberate State action, subsequent restrictions on laissez-faire started in a spontaneous way. Laissez-faire was planned; planning was not.”).

sometimes it presents itself as an inevitable, but underappreciated side effect of other policy choices—as in the case of local zoning laws, procurement processes, and infrastructure arrangements across the country, for example.

In a similar market-constructive fashion, intellectual property law grants exclusive rights to promote the progress of science and useful arts.³⁷⁷ In other words, we create, protect, and tolerate monopolies to reward innovation, as “property is only another name for monopoly.”³⁷⁸ Though, as Mark Lemley rightly points out, this type of monopoly might not necessarily convey market power, as there might be substitutes for the protected technology or work.³⁷⁹ And still, the enforcement of IP rights serves an equivalent function as the non-enforcement of antitrust law— incentivizing dynamic innovation. IP law and antitrust simply start with opposite premises. In IP law, knowledge and ideas are free and not monopolized unless they are covered by an exclusive right. Antitrust doctrine tolerates monopolies based on property rights and other factors, unless the behavior leading to that state proves to be anticompetitive. Despite these differences in the direction, both IP law and antitrust should come to similar conclusions relating to the optimal design of incentives for innovation. Curiously, they do not.

It comes as no surprise that concerns for competition and innovation take center stage in shaping the scope and duration of the exclusionary powers intellectual property provides.³⁸⁰ All the more remarkable is the tendency of competition policy to ignore fundamental insights into the optimal design of frameworks for innovation that have been established in the area of intellectual property law:³⁸¹ while monopolies in the form of exclusionary property rights can serve as incentives for creativity,

³⁷⁷ See U.S. CONST. art. I, § 8, cl. 8. Note that the constitutional basis for exclusive rights still reflects a policy choice—only at a different level.

³⁷⁸ Eric A. Posner & E. Glen Weyl, *Property Is Only Another Name for Monopoly*, 9 J. LEGAL ANALYSIS 51 (2017). See Mark A. Lemley, *Economics of Improvement in Intellectual Property Law*, 75 TEX. L. REV. 989, 1066 (1997).

³⁷⁹ *Id.* at 1066.

³⁸⁰ Gilbert & Shapiro, *supra* note 47, at 111.

³⁸¹ A notable exception in this regard is Philip Weiser, *supra* note 47.

innovation and, at least³⁸² in patent law, disclosure and dissemination of information,³⁸³ they should be limited in scope by considerations of public policy. Antitrust doctrine also assumes that expected monopoly profits of digital platforms incentivize investments and dynamic innovation. While the necessity and virtue of IP rights as a means to incentivize innovation has remained contested,³⁸⁴ limitations in their duration are all but universally accepted policies in practice.³⁸⁵ Antitrust doctrine, on the other hand, limits the scope of monopolies only in very exceptional cases and fails to set definite end dates of monopolies altogether.

As for platforms, at least three dimensions define the value of the monopoly and, thus, the potential reward as an incentive for dynamic innovation.³⁸⁶ The first axis defines the scope, breadth, or material robustness of the monopoly.³⁸⁷ What exactly falls under the exclusive right of the author or inventor? Which otherwise infringing behavior must the rights holder tolerate to satisfy concerns of public policy, like education, public debate, or technological interoperability and standardization? Richard Gilbert and Carl Shapiro equate this dimension “with the flow rate of profit available to the patentee while the patent is in force.”³⁸⁸ Limiting the scope of the (potential) monopoly, copyright law includes notions of fair use and compulsory licensing, to further public policy and increase the allocative efficiency.³⁸⁹ Patent law lacks a direct equivalent of fair use;

³⁸² Copyright law also creates (some) incentives for disclosure, for example, by requiring registration as a prerequisite to certain remedies for infringement, 17 U.S.C. § 412, or by creating *prima facie* evidence of the validity of the copyright and of the facts stated in the certificate, 17 U.S.C. § 410(c). See Lydia Pallas Loren & R. Anthony Reese, *Proving Infringement: Burdens of Proof in Copyright Infringement Litigation*, 23 LEWIS & CLARK L. REV. 621, 637–40 (2019).

³⁸³ Jeanne C. Fromer, *Patent Disclosure*, 94 IOWA L. REV. 539, 544–62 (2009).

³⁸⁴ See KAL RAUSTIALA & CHRISTOPHER JON SPRIGMAN, THE KNOCKOFF ECONOMY: HOW IMITATION SPARKS INNOVATION (2012); Amy Kapczynski & Talha Syed, *The Continuum of Excludability and the Limits of Patents*, 122 YALE L.J. 1900 (2013).

³⁸⁵ William M. Landes & Richard A. Posner, *Indefinitely Renewable Copyright*, 70 U. CHI. L. REV. 471, 471 (2003).

³⁸⁶ See Gilbert & Shapiro, *supra* note 47, at 106.

³⁸⁷ *See id.*

³⁸⁸ *Id.*

³⁸⁹ Jacob Victor, *Reconceptualizing Compulsory Copyright Licenses*, 72 STAN. L. REV. 915 (2020).

the closest relative to the idea behind copyright's fair use doctrine might be seen in essential patents, licensed according to fair, reasonable, and non-discriminatory terms (FRAND), albeit based on voluntary agreements and for compensation.³⁹⁰ And "in general a refusal to license a patent [remains] simply a subset of refusals to deal."³⁹¹ That said, patents need to satisfy several conditions that are aimed at preventing overly broad exclusive rights and, thus, monopolization.³⁹²

The second dimension stands for the duration of the exclusive right.³⁹³ Congress set the default duration of copyrights to "a term consisting of the life of the author and 70 years after the author's death"³⁹⁴ and the default duration of a patent to "20 years from the date on which the application for the patent was filed in the United States."³⁹⁵ And, if trade secrets were correctly understood as intellectual property rights, they would also be subject to an expiration date.³⁹⁶

The third factor reflects the practical attainability and enforceability of the rights, including the precision of the statutory language, the access to and the procedures of the court system, the rule of law, and systemic structures of power.³⁹⁷ In effect, the property-rights based incentives for

³⁹⁰ See Herbert Hovenkamp, *FRAND and Antitrust*, 105 CORNELL L. REV. 1683, 1684 (2020) ("[T]he essence of FRAND is that it is the product of a voluntary agreement among the participants, requiring them to make their patents available on FRAND terms."). See also Jorge L. Contreras, *A Brief History of FRAND: Analyzing Current Debates in Standard Setting and Antitrust Through a Historical Lens*, 80 ANTITRUST L.J. 39 (2015); A. Douglas Melamed & Carl Shapiro, *How Antitrust Law Can Make FRAND Commitments More Effective*, YALE L.J. 2110, 2117–2118 (2020).

³⁹¹ Hovenkamp, *supra* note 390, at 1697 (2020).

³⁹² See Katherine J. Strandburg, *Patent Fair Use 2.0 Bend or Break: The Patent System in Crisis*, 1 U.C. IRVINE L. REV. 265, 266 (2011) (arguing for a "fair-use-type infringement exemption" in patent law).

³⁹³ See *id.*

³⁹⁴ 17 U.S.C. § 302(a).

³⁹⁵ 35 U.S.C. § 154(a)(2).

³⁹⁶ See Mark A. Lemley, *The Surprising Virtues of Treating Trade Secrets as IP Rights*, 61 STAN. L. REV. 311, 352–53 (2008) ("One possible implication of treating trade secrets as IP rights, then, is that the law should provide that trade secrets "expire" after a certain period.").

³⁹⁷ Lisa D. Cook, *Violence and Economic Activity: Evidence from African American Patents, 1870–1940*, 19 J. ECON. GROWTH 221, 222 (2014) (clarifying that the doctrinal recognition of property rights in itself remains insufficient where other power structures

innovation presents itself as a function of the scope, duration, and certainty of the potential monopoly.³⁹⁸

In the following discussion, I will focus on the optimal scope and the duration of IP rights,³⁹⁹ as they present the equivalent of the relevant parameters for antitrust enforcement against digital platforms. The broader the scope and the longer the duration of the monopoly are, the greater the incentive to create the underlying innovation. Yet greater incentives for dynamic innovation come at the “static costs of patent monopoly power.”⁴⁰⁰ This is because any monopoly creates deadweight loss in the market—in the form of higher prices and less output overall. Generally, a balancing of incentives for innovation and costs leads to balanced suggestions: long lasting exclusive rights with a narrow scope, broad monopoly protections for a very limited period, or moderate protections for a moderate time.

Isolating the duration of the exclusive right from the scope of the patent, William Nordhaus contends that, theoretically, “[t]he optimal life [of a patent] will always be a finite, positive number of years.”⁴⁰¹ Though, Nordhaus points out that the “determination of the optimal life is extremely difficult, but not necessarily very important.”⁴⁰² Rather, policy-makers should identify the point at which the patent system only

continue to prevent or suppress innovation: “I show that patenting rates by African Americans in the 19th and 20th centuries systematically declined in areas affected by race riots and lynchings. . . . I find that extrajudicial killings and loss of personal security depressed patent activity among blacks by more than 15% annually between 1882 and 1940. . . . The economic significance of the findings in this paper implies that, then and now, conflict and hate-related violence, and the resulting uncertainty in property-rights enforcement, may substantially affect the level, direction, and quality of inventive activity and economic growth.”).

³⁹⁸ See David Encaoua et al., *Patent Systems for Encouraging Innovation: Lessons from Economic Analysis*, 35 RSCH. POL'Y 1423, 1432 (2006).

³⁹⁹ See Chou & Shy, *supra* note 47, at 811; Gilbert & Shapiro, *supra* note 47; NORDHAUS, *supra* note 47, at 76–86.

⁴⁰⁰ Gilbert & Shapiro, *supra* note 47, at 106. See Encaoua et al., *supra* note 398, at 1433. (“Optimal patent breadth is obtained by minimising the discounted value of the deadweight loss created by the patent under the constraint that the discounted profit provides enough incentives to invest.”). For the trade-off generally, see Chou & Shy, *supra* note 47, at 811; NORDHAUS, *supra* note 47, at 76.

⁴⁰¹ NORDHAUS, *supra* note 47, at 79.

⁴⁰² *Id.* at 86.

provides diminishing marginal returns and, thus, should be complemented by other incentives for innovation.⁴⁰³ Richard Gilbert and Carl Shapiro suggest that infinite patents with a narrow scope optimally balance the monopoly-induced deadweight loss and the incentives for innovation, irrespective of one's preferences for the overall magnitude of the reward to inventors.⁴⁰⁴ The authors point at "more careful antitrust treatment of patent practices, such as provisions of licensing contracts" to limit the scope of the patents.⁴⁰⁵ Chien-Fu Chou and Oz Shy partially confirm the notion of optimally infinite patents, but complicate the analysis.⁴⁰⁶ In contrast to Gilbert and Shapiro, the authors find "that economies with a (real) interest rate exceeding the population growth rate should set a finite patent life system."⁴⁰⁷

Ted O'Donoghue, Suzanne Scotchmer, and Jacques-François Thisse emphasize the significance of what they call the effective patent life, which describes the "expected time until a patented product is replaced in the market" and might differ from the statutory duration of the patent.⁴⁰⁸ In doing so, the authors combine notions of scope and duration.⁴⁰⁹ They conclude that "[a] specified rate of innovation can be achieved with either (1) a patent of infinite length and modest leading breadth [protection against improved products], or (2) a patent with infinite leading breadth and modest length."⁴¹⁰ David Encaoua, Dominique Guellec, and Catalina Martínez favor a self-selection of the level of protection by inventors via higher fees for a broader scope of protection.⁴¹¹ This would allow for more granular methods of finding the optimal patent life span based on a process that incentivizes self-assessment and taxes

⁴⁰³ *Id.*

⁴⁰⁴ Gilbert & Shapiro, *supra* note 47, at 107, 111.

⁴⁰⁵ *Id.* at 111.

⁴⁰⁶ Chou & Shy, *supra* note 47, at 818.

⁴⁰⁷ *Id.*

⁴⁰⁸ Ted O'Donoghue et al., *Patent Breadth, Patent Life, and the Pace of Technological Progress*, 7 J. OF ECON. & MGMT. STRATEGY 1, 2 (1998).

⁴⁰⁹ *Id.*

⁴¹⁰ *Id.* at 4.

⁴¹¹ Encaoua et al., *supra* note 398, at 1438.

unproductive market foreclosure. In fact, the scope and duration of the exclusive right could both be standardized or granularly assessed. Many commentators agree that a granular assessment of the scope of the rights for different markets, products, and services would (theoretically) result in optimal incentives.⁴¹² And, at least some see value in a non-standardized lifespan for patents across industries, by, for example, accounting for the difficulty of advancing knowledge in certain areas.⁴¹³ Practically just as relevant seem the additional costs granular assessments would entail based on necessary assessments.

Despite their conceptual values, many of the models to determine the optimal patent duration implicitly ignore transaction costs associated with the management of property rights. This seems especially striking where commentators suggest infinite lifespans of exclusionary rights. The resulting transaction costs would long outpace any reasonable reward for an invention. Especially with respect to patents, the thicket of existing rights strangles innovation as it creates enormous search costs for inventors. After all, inventors must ensure that their products or methods do not infringe existing patents. As the rules against infringements necessarily carry a degree of uncertainty and invite frivolous claims, any consideration of the overall systemic costs must at least include the expected expenses for litigation and other forms of conflict resolution to assert the exclusionary rights and to defend against their assertion. Beyond these quantifiable and measurable costs, a thicket of exclusionary rights shapes culture and collaboration. Intellectual property rights divide knowledge and information into “yours” and “mine.” While this division precisely serves as the basis for the incentive structure, especially infinite lifespans of monopolies on knowledge ignore the

⁴¹² *Id.* at 1431. (“Optimal patentability requirements are higher when technical change is more rapid or innovative ideas arrive more frequently because in that case the length of the incumbency period is shorter, and thus the opportunity cost of not getting a patent decreases. An implication of this finding is that the factors affecting the optimal level of the patentability requirement are technology specific, whereas, the current patent system is characterized by uniform rules, according to the ‘one size fits all’ principle.”)

⁴¹³ Chou & Shy, *supra* note 47, at 811; NORDHAUS, *supra* note 47, at 79.

communal power of unrestrained access to a commonly accessible foundation of knowledge.

Moreover, when considering optimal frameworks for incentives, we must significantly discount future rewards for at least four reasons. First, future rewards present themselves as inherently uncertain. Even early neoclassic approaches adopt this concern. Second, what matters for innovation is less the theoretical discounted value based on rational choice theory and more the actual incentives humans experience. Behavioral economics suggest that humans might further discount future earnings beyond purely mathematical uncertainty.⁴¹⁴ Third, neither authors nor inventors necessarily have access to markets that would allow them to monetize their infinite exclusive rights at their theoretical face value. Fourth, monopolization has significant distributive effects; while it might incentivize innovation, it also likely drives inequality.⁴¹⁵ In aggregate, these (practical) considerations explain why all jurisdictions opt for limited life spans of patents and copyrights.

All this is not to suggest that we should replicate the IP framework and apply it to digital platforms. In fact, IP law suffers from its own monopoly problem. Congress has gradually extended the duration of copyrights from a maximum of 28 years in the Copyright Act of 1790 to today's levels of 70 years after the author's death—significantly beyond the minimum requirements of the Berne Convention.⁴¹⁶ The patent system is plagued with frivolous claims by so-called patent trolls which benefit from low barriers to patentability and high litigation costs that can force opposing parties into settlement deals.⁴¹⁷ Also, strategies to layer patents

⁴¹⁴ Partha Dasgupta & Eric Maskin, *Uncertainty and Hyperbolic Discounting*, 95 AM. ECON. REV. 1290, 1290–91 (2005).

⁴¹⁵ Lina Khan & Sandeep Vaheesan, *Market Power and Inequality: The Antitrust Counterrevolution and Its Discontents*, 11 HARV. L. & POL'Y REV. 235, 236 (2017).

⁴¹⁶ Art. 7, Sec. 1 of the Berne Convention mandates a period of “the life of the author and fifty years after his death.” Berne Convention for the Protection of Literary and Artistic Works, Paris Act, art. VII, § 8, July 24, 1971, 25 U.S.T. 1341, 828 U.N.T.S. 221.

⁴¹⁷ Doug Lichtman & Mark A. Lemley, *Rethinking Patent Law's Presumption of Validity*, 60 STAN. L. REV. 45, 48 (2007).

prolong their effective duration significantly.⁴¹⁸ Yet, despite frequent legislative bows to the lobbying pressures of IP rights holders and their associations, the existence of scope and duration limitations of exclusive rights has never been seriously questioned as a matter of practical policy.

Antitrust law, especially when applied to digital platforms should embrace the idea that monopolies protected and tolerated to incentivize innovation should remain limited in scope and duration. This fundamental idea translates into access rights, neutrality requirements, and, after an appropriate amortization, an upending of the monopoly via interoperability requirements between platforms on the primary market, and price caps on platforms services provided to the secondary market, which would effectively turn the digital platforms into a public utility.

B. EU Competition Law

The EU's limitation on unilateral conduct in article 102 of the Treaty on the Function of the EU (TFEU) is inspired by section 2 of the Sherman Act and resembles its character: "Any abuse by one or more undertakings of a dominant position within the internal market [of the EU] or in a substantial part of it shall be prohibited as incompatible with the internal market in so far as it may affect trade between [EU] Member States."⁴¹⁹ As with its counterpart in the U.S., this provision serves as the statutory basis for the essential facilities doctrine. Yet, as applied, the EU statute is significantly stricter than the current understanding of its U.S. role model. In fact, article 102 TFEU more closely aligns with the original, pre-Chicago School understanding of section 2 of the Sherman Act. Two differences stand out that provide inspiration for a renewed essential facilities doctrine in the United States. First, article 102 TFEU rests on a concept of a special responsibility for competition as a function of market power.

⁴¹⁸ Carl Shapiro & Mark A. Lemley, *The Role of Antitrust in Preventing Patent Holdup*, 168 U. PA. L. REV. 2019 (2020).

⁴¹⁹ Consolidated Versions of the Treaty on European Union and the Treaty on the Functioning of the European Union, art. 102, cl. 1, Mar. 30, 2010, 2010 O.J. (C 83) 47 [hereinafter TFEU].

Second, the EU statute goes beyond addressing further monopolization and directly limits monopoly rent extraction.

According to settled case law by the European Court of Justice, a dominant undertaking has “a special responsibility not to allow its conduct to impair genuine undistorted competition.”⁴²⁰ This is remarkable, as it imposes a positive duty upon the dominant firm to uphold competition, instead of a purely negative prohibition of anticompetitive conduct. The reasoning behind that approach: as an entity gains the opportunity to act independently from market forces, it ought to lose the capacity to act independently of legal constraints. What shapes the framework for all dominant firms especially shapes the policy towards those that control essential bottlenecks. As an example of how far this responsibility can go, consider the European Commission’s decision in *Port of Rødby*.⁴²¹ A port facility refused to grant competitors access and, among others, invoked capacity concerns. In response, the court pointed out “that there is no evidence that the existing facilities at Rødby would today be saturated or that, subject to alterations which Stena has informed the Commission it is prepared to finance, existing port capacity is unable to cope with an increase in trade.” In doing so, the court not only laid the burden of proof on the defendant to show that the port is at capacity. It also considered feasible expansions of the facility. In essence, the special responsibility of a dominant firm to uphold competition might even reach beyond the status quo of the facility.

Finally, article 102 TFEU directly limits the extraction of monopoly rents.⁴²² In one of the examples, the provision clarifies that “abuse may, in particular, consist of directly or indirectly imposing unfair purchase or selling prices or other unfair trading conditions.”⁴²³ This allows the European Commission and courts to second guess prices and conditions of

⁴²⁰ Case C-552/03, Unilever Bestfoods v. Comm’n, 2006 E.C.R. I-9091 ¶22. See Case C-52/09, Konkurrensverket v. TeliaSonera Sverige AB, 2011 E.C.R. I-527 ¶¶2, 3, 8, 24; Case C-202/07, Fr. Télécom SA v Comm’n, 2009 E.C.R. I-2369 ¶105.

⁴²¹ Commission Decision 94/119/EC, 1994 O.J. (L55) 52.

⁴²² Geradin & Katsifis, *supra* note 30.

⁴²³ TFEU, *supra* note 419, at art. 102, cl. 2(a).

dominant firms' offerings—without requiring the stringent conditions of the essential facilities doctrine. The German Federal Cartel Office, for example, based its recent investigation of the terms governing the relationship between Amazon and its third-party vendors on the functionally equivalent German provision and won a far-reaching settlement.⁴²⁴ The European Commission may invoke the limitation on rent extraction in its current investigation of Amazon and Apple, as well.

In December 2020, the European Commission proposed the Digital Markets Act (DMA) as part of a reform package,⁴²⁵ which also included a proposal for the Digital Services Act.⁴²⁶ If enacted, the DMA will govern the obligations of digital gatekeepers toward the businesses that depend on them and prohibit certain practices "that limit contestability or are unfair."⁴²⁷ The behavioral limitations in article 5 and 6 of the proposal directly address some of the business practices that have been identified as specifically problematic.⁴²⁸ Notably, the Proposal suggests prohibiting gatekeepers "from using, in competition with business users, any data not publicly available, which is generated through activities by those business users"⁴²⁹ and from self-preferencing on their platforms.⁴³⁰ The Commission also wants to require gatekeepers "to allow end users to un-

⁴²⁴ BUNDESKARTELLAMT, *supra* note 123, at 7-8.

⁴²⁵ *Proposal for a Regulation of the European Parliament and of the Council on contestable and fair markets in the digital sector (Digital Markets Act)*, COM (2020) 842 final (Dec. 15, 2020).

⁴²⁶ *Proposal for a Regulation of the European Parliament and of the Council on a Single Market for Digital Services (Digital Services Act) and amending Directive 2000/31/EC*, COM (2020) 825 final (Dec. 15, 2020).

⁴²⁷ *Proposal*, *supra* note 425 at 39–41.

⁴²⁸ *See Id.*

⁴²⁹ *Id.* at 40 (proposing art. 6[1][a]: "refrain from using, in competition with business users, any data not publicly available, which is generated through activities by those business users, including by the end users of these business users, of its core platform services or provided by those business users of its core platform services or by the end users of these business users").

⁴³⁰ *Id.* (proposing art. 6[1][d]: "refrain from treating more favourably in ranking services and products offered by the gatekeeper itself or by any third party belonging to the same undertaking compared to similar services or products of third party and apply fair and non-discriminatory conditions to such ranking").

install any pre-installed software applications,”⁴³¹ and to ensure that third party applications can interoperate with the ecosystem of the gatekeepers, specifically with app stores and operating systems.⁴³²

These principles lend themselves as inspiration when designing a renewed essential facilities doctrine that embraces notions of access to markets and a participatory economy—notions that had been part of the U.S. antitrust canon for so long and once served as a role-model for Europe.

C. Designing a Two-Tiered Framework for Innovation on Digital Platforms

To open the bottlenecks for digital commerce, I suggest a two-tiered approach for a revived, renewed, and expanded essential facilities doctrine. Where the market provides insufficient alternatives to independent vendors that cannot reasonably replicate the facility themselves, level one bars discrimination and self-preferencing by platforms and creates access rights for third parties. After an appropriate amortization period, level two upends persistent bottleneck monopoly power entirely, by demanding interoperability at the platforms’ level and fair prices and terms. The second level also ends the possibility of extracting monopoly rents based on network effects.

One hundred years of case law provide a solid foundation for level one. In many ways, digital platforms resemble older forms of network

⁴³¹ *Id.* (proposing art. 6[1][b]: “allow end users to un-install any pre-installed software applications on its core platform service without prejudice to the possibility for a gatekeeper to restrict such un-installation in relation to software applications that are essential for the functioning of the operating system or of the device and which cannot technically be offered on a standalone basis by third-parties”).

⁴³² *Id.* (proposing art. 6[1][c]: “allow the installation and effective use of third party software applications or software application stores using, or interoperating with, operating systems of that gatekeeper and allow these software applications or software application stores to be accessed by means other than the core platform services of that gatekeeper. The gatekeeper shall not be prevented from taking proportionate measures to ensure that third party software applications or software application stores do not endanger the integrity of the hardware or operating system provided by the gatekeeper;” [f] “allow business users and providers of ancillary services access to and interoperability with the same operating system, hardware or software features that are available or used in the provision by the gatekeeper of any ancillary services”).

infrastructure, namely the railroads.⁴³³ The criteria developed by courts over the years (before the decline of the doctrine began) can readily be applied to digital platforms. Access rights and bans on discrimination and self-preferencing provide generally applicable remedies. Listings on a platform, inclusion in an algorithm, or admittance to a special showcase are functional equivalents of the admission to railroad facilities,⁴³⁴ press associations,⁴³⁵ or football stadiums.⁴³⁶ In fact, platforms and networks provide the prime examples of the doctrine's application.⁴³⁷ Where data and the control over data form the bottleneck, competitors can be granted access to that data within the boundaries of the applicable privacy rules.⁴³⁸ To effectively enable dynamic innovation on platforms, access rights to digital platforms necessarily require an element of vertical interoperability. Google's and Apple's app stores must ensure that third-party app developers can build on the incumbents' infrastructure. This requires the disclosure of code and an opening of the necessary access point interfaces (APIs). Finally, the first level finds support in the generally accepted fair use exceptions from IP rights and compulsory licensing regimes. Level one also showcases the beauty of the essential facilities doctrine: its flexibility.

Defining the second level proves more challenging. Before going into substance, consider the framing of the issue of monopolization. As the alleged major concern of both IP and antitrust frameworks centers on innovation and progress based on markets and competition, we should adopt similar approaches to designing optimal frameworks. Instead of assuming that a certain state of the market marks a natural starting point,

⁴³³ See *United States v. Terminal R.R. Ass'n of St. Louis*, 224 U.S. 383 (1912).

⁴³⁴ See *id.*

⁴³⁵ See *Associated Press v. United States*, 326 U.S. 1 (1945).

⁴³⁶ See *Hecht v. Pro-Football, Inc.*, 570 F.2d 982 (D.C. Cir. 1977).

⁴³⁷ *Terminal R.R. Ass'n of St. Louis*, 224 U.S. 383 (addressing an element of a railroad network); *Associated Press*, 326 U.S. 1 (addressing a platform for information aggregation in the press); *MCI Commc'n Corp. v. Am. Tel. & Tel. Co.*, 708 F.2d 1081 (7th Cir. 1983) (addressing a telephone network).

⁴³⁸ Abrahamson, *supra* note 5, at 870–72. See generally Erika M. Douglas, *The New Antitrust/Data Privacy Law Interface*, 130 YALE L.J.F. 647 (2021).

we should ask what kind of market structures we want to create to ensure open markets and competition. As all market conditions function as social and legal constructs, a contrast between defining the scope and duration of a monopoly in IP law and limiting the behavior of monopolists in antitrust law lacks coherent justifications. A major step forward entails embracing IP law's foundational logic in antitrust and moving towards a positive definition for our tolerance for monopolization as an incentive for innovation. While the formulation of starting points might not matter much for theoretical models, it has the potential to construct a political economy of relaxing bottlenecks and implications for legal defaults and the allocations of burdens of proof.

On substantive grounds, the second level of the essential facilities doctrine should embrace the notion of absolute limitations to the lifetime of the monopoly. The dissolution of a monopoly based on exclusive rights requires nothing more than the sunset of its legal recognition. While copyrights require physical manifestations of the idea and patents a description and registration, their value can be severed from their respective expression. Publishers can simply print books with novels whose legal protections have ended, for example. Remaining obstacles to the reproduction or provision of enhanced goods due to lack of knowledge and skills, potentially exacerbated by trade secret protection can often be overcome via reverse engineering. Upending network effect-based monopolies of digital platforms requires significantly more than the stroke of a pen erasing an exclusive right. First, platforms' monopolies build on much more than a single IP right. In fact, they build on a bundle of exclusive rights ranging from patents on software to physical property of server farms, network infrastructure, and supply infrastructure, and from trade secrets to meshwork of contractual relationships.

Second, platforms consist of more than knowledge for dissemination. To reap the benefits of network effects, platforms require constant operation. In e-commerce the platform ensures listing and the matchmaking between merchants and customers; it might offer the processing of payments and even the handling of the goods sold on the platform—as is the

case for Amazon. App store operators curate software offerings and provide minimum standards for security and compatibility with the operating system in question. Even if all legal protections of underlying exclusive rights lapsed, competitors would not automatically gain access to the foreclosed markets. To the contrary, the markets would collapse because the underlying platform would no longer operate.

Therefore, the functional equivalent of lifetime limitations for IP must ensure the continuous operation of the platform. Several different yet compatible approaches can guarantee a transition that ensures continuous operations. First, after an appropriate amortization period, antitrust enforcers can mandate horizontal interoperability which requires platforms to open up their access point interfaces (APIs) to potential competitors on the market for platforms.⁴³⁹ For Amazon, that would mean to display offers that had been posted on competing platforms, for example. For Facebook, it would mean to deliver messages to people on its network and display content that originates from other platforms, such as Twitter, or TikTok—very much in the spirit of what Mike Masnick proposes as a refocus on interoperable protocols over platforms.⁴⁴⁰ This would significantly reduce barriers to entry in the market for platforms, as it would grant competitors access to existing networks and, thus, allow them to participate in network effects. Conveniently, mandatory interoperability would also automatically separate “true” innovation from pure network effects. Second, antitrust enforcers should broadly limit the remaining potential for an extraction of monopoly rents to reasonable returns on investments, both as it relates to prices and to terms of the access. In effect, this would ensure the continuous operation of the platform as a

⁴³⁹ COMPETITION & MKTS. AUTH., *supra* note 17, at 370–74. For a framework for adversarial interoperability, see Kadri, *supra* note 14. See also Mike Masnick, *Protocols, Not Platforms: A Technological Approach to Free Speech*, KNIGHT FIRST AMENDMENT INST. (Aug. 29, 2019), <https://perma.cc/UWW8-9GUH> (refocusing on protocols instead of platforms).

⁴⁴⁰ See Masnick, *supra* note 439. See COMPETITION & MKTS. AUTH., *supra* note 17, at 370–74.

quasi-public utility,⁴⁴¹ without providing windfall profits for innovation that had already been adequately rewarded. Again, the advantage of the essential facilities doctrine lies in its flexibility.

Defining the optimal amortization period might be difficult, but settling on a reasonable approximation is by no means impossible. As debates over optimal patent duration show, economic models can contribute valuable insights. Yet, the degree of monopolization tolerated as an incentive for dynamic innovation will inevitably also include a political value judgement. Existing lifespans of IP rights cannot serve as blueprints. Their underlying calculus for incentives varies too much as to allow for direct analogies. Considering the speed with which platforms can create the network effects necessary to tip the market, the limited investment necessary to reach that tipping point in a competitive market, and the rapid conversion of the investment into monopoly profits overall suggest a period of significantly less than the 20 years of tolerated monopolization foreseen in patent law. That said, a monopoly protected mainly by network effects in the current market environment is arguably more contestable than an IP-based monopoly. The remaining competitive pressure limits the monopoly rent extraction to some extent and should be recognized as suggesting to prolong the appropriate amortization period somewhat.

Other than IP rights, network effect-based monopolies lack a clear start date. There is no equivalence of a specific date of creation or registration. Instead, antitrust enforcers could rely on the moment of the tipping of the market. One option would be to rely on a specific market share as a proxy for the tipping of a network market, as that suggests a sustainable monopoly. Another option would be to try to measure the tipping of the market more precisely. Jean-Pierre H. Dubé, Günter J. Hitsch, and Pradeep K. Chintagunta explain that “an empirical measure of tipping would need to compare the expected concentration in a market

⁴⁴¹ See Rahman, *The New Utilities*, *supra* note 13, at 1669–75; Rahman, *Regulating Informational Infrastructure*, *supra* note 13.

to the hypothetical expected concentration that would arise if the sources of indirect network effects were reduced or eliminated.”⁴⁴² Yet, the authors contend that “[i]n most cases of interest, this [needed] counterfactual outcome is not observed.”⁴⁴³ For an approximation of the tipping point one could further consider the adoption rate, expressed as a function of the market penetration over time. For the winning platform this will appear as an S-curve. The steepest point of this curve reflects the fastest growth of the network and can provide insights into the pull of the network-effects and the tipping of the market. The advantage of hindsight allows courts and agencies to circumvent the difficulties associated with forecasting future success in markets with high network effects.⁴⁴⁴ As antitrust provides ex post remedies, all this can be observed with the benefit of hindsight.

A filing system could provide an alternative solution. For that, the law would need to create a default interoperability requirement—irrespective of how long the platforms have been able to extract monopoly rents. Platforms can then file for a grace period of a duration to be determined. This filing will depend on a self-assessment. However, the platform will only be shielded from interoperability requests that were submitted after the date of the filling. Hence, the platform will have a strong incentive to file for an exemption before it expects a competitor to prove that it had become essential.

D. Sustainable Incentives for Innovation: From Competition for Platforms to Competition on Platforms

Properly understood, the essential facilities doctrine does not hinder, but rather promotes innovation. For too long, a narrow perspective on competition for markets has not only missed important aspects of static innovation, but also limited our understanding of dynamic innovation

⁴⁴² Dubé et al., *supra* note 46, at 216.

⁴⁴³ *Id.* at 221.

⁴⁴⁴ See Detlef Schoder, *Forecasting the Success of Telecommunication Services in the Presence of Network Effects*, 12 INFO. ECON. & POL'Y 181, 181–82 (2000).

itself. First, this is because dynamic innovation manifests itself not only in the competition for platforms, but also on platforms. Take smart phone apps. Their development undoubtedly reflects dynamic innovation. Barbara van Schewick points to the example of Niklas Zennström and Janus Friis who “might have dropped the idea” of creating Skype if they would have been required to take potential discrimination within the internet infrastructure into account in 2002.⁴⁴⁵ The essential facilities doctrine provides the environment necessary for this kind of dynamic innovation.

Second, the narrow understanding of dynamic innovation frontloads competition and incentives for innovation, as described above. This frontloading results in two strategies for platform start-ups. First, there is the strategy of winning the market. Once the network effects have created the necessary barriers to entry, the incentives for further innovation diminish and the then incumbent platform can extract monopoly rents. Second, there is the safer strategy of aiming for an acquisition by an incumbent. This strategy has become the default exit, chosen by 9 out of 10 of the nascent challengers—⁴⁴⁶ understandably so, as it provides an alternative to giving up on ideas entirely in light of potential future discrimination by essential platforms.⁴⁴⁷ The prevalence of this second strategy come with even worse consequences for long-term innovation, as the acquiring incumbents frequently do not even want to continue the start-up’s product, but only remove it from the marketplace.⁴⁴⁸ The essential facilities doctrine offers realistic exit and growth strategies for innovators beyond acquisitions by incumbents. This shapes the incentive structures and encourages dynamic innovation that leads to real applications designed for adoption instead of acquisition.

In practice, access rights, anti-discrimination rules and limits on prices and terms applied to bottlenecks lower barriers to entry not only

⁴⁴⁵ VAN SCHEWICK, INTERNET ARCHITECTURE & INNOVATION, *supra* note 48, at 216.

⁴⁴⁶ Mark A. Lemley & Andrew McCreary, *Exit Strategy 6* (Stanford L. and Econ. Olin, Working Paper No. 542, 2019).

⁴⁴⁷ VAN SCHEWICK, INTERNET ARCHITECTURE & INNOVATION, *supra* note 48, at 215–16.

⁴⁴⁸ Lemley & McCreary, *supra* note 446, at 8.

for firms on the secondary market, but also for challengers in the market for platforms as it reduces monopoly profits. The opposite is true for the owner of the system, of course; their incentives to innovate increase with the expected potential to discriminate.⁴⁴⁹ Overall, the essential facilities doctrine adequately balances allocative efficiency and incentives for dynamic innovation in the market for platforms and on platforms. Most importantly, it smoothens incentives for innovation over time.

E. Calibrating for Symmetry: Error Costs in Digital and Dynamic Markets

Any legal test produces errors. Those errors fall into one of two categories: false positives and false negatives.⁴⁵⁰ Applied to the essential facilities doctrine, a false positive, or type I error, falsely identifies a facility as an essential facility. It imposes mandates to grant competitors access, where no such duties were appropriate. A false negative, or type II error, erroneously fails to identify a facility as an essential facility. It prevents competitors from accessing a facility that should have granted them access. There is no evidence to support a claim that either of these errors, *prima facie*, causes more harm than the other. Despite this lack of evidence, critics of the essential facilities doctrine consistently focus on alleged false positives to argue for its restraint. Curiously, this line of reasoning continues to prevail in a highly concentrated and foreclosed economic environment with historically high profit margins,⁴⁵¹ which—all other aspects equal—should generally suggest a higher tolerance for type II errors over type I errors.

No doubt, type I errors can occur in the application of the essential facilities doctrine. In fact, it would be remarkable if we did not witness any false positives, as an ideal policy would create type I and type II errors of equal gravity. Like Chicago School economist George Stigler

⁴⁴⁹ VAN SCHEWICK, *Network Neutrality and Quality of Service*, *supra* note 48, at 216.

⁴⁵⁰ For a comprehensive account of error costs in antitrust analysis and enforcement including several of the following points, see BAKER, *supra* note 48 at 71–95.

⁴⁵¹ See, Berry et al., *supra* note 49.

purportedly stated: "If you never miss a plane, you're spending too much time at the airport."⁴⁵² While "some truly silly cases" may be inevitable, there has never been evidence of systemic over-enforcement of the doctrine.⁴⁵³ Specifically, the mechanism that Philipp Areeda identified, according to which an extreme antitrust case triggers a judicial decision that then gets applied mechanically and expanded to a ridiculous level,⁴⁵⁴ has not been observed in reality.

As Weber Waller points out, silly claims "rarely convince[] a court that the facility in question [is] 'essential.'"⁴⁵⁵ Instead, arguments against the institution of the doctrine, by and large, build on anecdotal evidence of individual cases that allegedly took the wrong turn.⁴⁵⁶ Any abstraction from these hand-picked cases runs a significant risk of incorporating availability bias into the analysis: It is much easier to identify a false positive than it is to single out a false negative. Courts can dismiss cases based on countless considerations, and false positives naturally tend to attract much more attention and scrutiny. Finally, falsely imposed essential facility-type remedies remain comparatively easy to correct: a platform can simply be allowed exercise its bottleneck power again.⁴⁵⁷

Commentators have frequently pointed out that digital and dynamic markets follow an inherently different error cost calculus than traditional industries. They argue that, in a dynamic environment, type I errors weigh more gravely than otherwise equal type II errors. Allegations

⁴⁵² Christopher Avery & Sarah Turner, *Student Loans: Do College Students Borrow Too Much--Or Not Enough?*, 26 J. OF ECO. PERSPECTIVES 165, 185 (2012).

⁴⁵³ Putting concerns about under- and overenforcement into context, specifically as to whether we face historically far-reaching enforcement, see Waller, *supra* note 48, at 369. ("It should be noted that Areeda was commenting at perhaps the high point of the essential facilities doctrine. Then and now, there were some truly silly cases being alleged.")

⁴⁵⁴ Areeda, *Essential Facilities: An Epithet in Need of Limiting Principles*, *supra* note 35, at 841.

⁴⁵⁵ Waller, *supra* note 48, at 369. (Adding that "[e]ven where a court was convinced that facility was essential, liability was almost always affirmed or denied on different grounds.")

⁴⁵⁶ *Id.* at 369–70.

⁴⁵⁷ See BAKER, *supra* note 48 at 89–90 (clarifying that erroneous judicial enforcement precedents are not stickier than consequences caused by market power).

range from an inherent inability of government entities, including agencies and courts, to assess innovative markets to hopes that, in dynamic markets, bottlenecks will be toppled by a dynamic innovation anyways. In some instances, the suspicion aims at government intervention in the so-called “free market,” in others, more targeted, at antitrust enforcement. Yet, just as there exists no evidence supporting a preference of type II errors over type I errors in general, such asymmetry does also not find any justification in digital or dynamic markets.

Take the alleged lack of understanding of digital and dynamic markets. At first glance, this argument appears to have its merits. As we learn about the emerging market conditions, the business models, and the potential problems, we will inevitably err in our preliminary assessments. Thus, the argument concludes, we should exercise extreme caution when interfering with the market. This line of thinking misses at least two points. First, as stressed before, any market is a socio-legal construct in which we constantly and inevitably define guardrails for competition as a matter of policy. What seems to be a natural process to which the essential facilities doctrine would constitute an interference, is itself constructed—only at a prior point in time. Second, especially in times of uncertainty pointing at dynamic markets cuts both ways. While market dynamism can indeed exacerbate the consequences of type I errors, it also has the potential to aggravate the costs of type II errors. For example, compensatory damages are systemically ill-suited to offset the true costs of past exclusionary conduct. Consider a digital platform that manages to pass the tipping point of the market due to anticompetitive behavior. The damage of such anticompetitive behavior is not reparable. The short window of opportunity for the competing platforms will have closed, for good. Third, it is time to acknowledge that 25 years into what is now called the platform economy, neither business models nor market structures are entirely novel anymore. If there are deficiencies in the understanding of the market structures among antitrust enforcers we should invest in additional resources. Though, re-calibrating the assessment of

error costs is just one step to establishing a renewed essential facilities doctrine.

IV. THE APPLICATION OF A RENEWED ESSENTIAL FACILITIES DOCTRINE TO DIGITAL PLATFORMS

Accepting the idea behind the essential facilities doctrine raises questions of how the doctrine can become part of a comprehensive response to bottlenecks in the digital economy. This Part touches upon applications and implications of the doctrine, whose strength rests on its flexibility as a principles-based standard. This feature inevitably, leaves several notable details to authorities, courts, and parties. Thus, I will not attempt to positively define specific terms that essential platforms need to offer in order to comply with the doctrine's requirements. Instead, I provide guidance laying out how the essential facilities doctrine could be applied and implemented. First, this Section situates the doctrine in the broader agenda to reestablish competition in the digital economy. Second, I will identify which aspects of platforms should be made accessible to competitors. Third, I will lay out how authorities and courts can impose remedies without granular definitions of appropriate prices and terms. Finally, this chapter will offer a path to implementing the substance of the essential facilities doctrine, via case law or regulation.

A. Expanding the Toolkit: From Alternatives to Complements

Antitrust enforcement cannot be understood in isolation. Rather, it is deeply entangled with various forms of social and legal preconditions for and ex-ante regulation of the market. Different types of antitrust remedies should, likewise, be seen as complements rather as alternatives.⁴⁵⁸ Currently, no sector-specific ex-ante regulatory framework addresses the lack of competition in the platform economy. Agency reports, journal articles, legislative proposals, and policy papers feature various ways to open up bottlenecks in digital commerce and recreate healthy

⁴⁵⁸ Khan, *supra* note 10, at 790–802.

competition: horizontal break-ups,⁴⁵⁹ vertical separation (i.e. separating platforms and commerce),⁴⁶⁰ (regulatory) interoperability requirements,⁴⁶¹ non-discrimination rules,⁴⁶² public utility frameworks or digital public infrastructure,⁴⁶³ data sharing and information disclosure mandates,⁴⁶⁴ and reforms to the tax code,⁴⁶⁵ to name the most prominent examples. Pursued in isolation, each of these measures would feature certain shortcomings and leave loopholes. In the following paragraphs, I will lay out some the deficiencies of promising regulatory approaches, to argue that we should pursue a comprehensive approach in reining in Big Tech's gatekeeping power that includes all of the discussed measures.

While entirely different in their mode of operation, most of the proposals share the goal of strengthening or reviving competition in areas in which outsized network effects have created enormous barriers to entry and, thus, diminished the competitive pressures digital platforms face. Some proposed interventions aim to reinstate competition in primary markets so as to prevent a leveraging of power into secondary markets.⁴⁶⁶ Other proposals acknowledge the structural obstacles to sustainable functioning competition, namely network effects within the current market architecture, and at least, for the interim, replace competitive processes with administrative or judicial assessments.⁴⁶⁷ Some favor sector-

⁴⁵⁹ Van Loo, *supra* note 51; TEACHOUT, *supra* note 51.

⁴⁶⁰ Khan, *supra* note 6; Warren, *supra* note 52.

⁴⁶¹ SUBCOMM. ON ANTITRUST, COM. AND ADMIN. L. OF THE H. COMM. ON THE JUDICIARY, 116TH CONG., *supra* note 12, at 384–86; COMPETITION & MKTS. AUTH., *supra* note 17, at 370–74; Kadri, *supra* note 14; Palka, *supra* note 53.

⁴⁶² SUBCOMM. ON ANTITRUST, COM. AND ADMIN. L. OF THE H. COMM. ON THE JUDICIARY, 116TH CONG., *supra* note 12, at 382–83; see also, van Schewick, *Network Neutrality and Quality of Service*, *supra* note 48.

⁴⁶³ See Rahman, *The New Utilities*, *supra* note 13; Rahman, *Regulating Informational Infrastructure*, *supra* note 13; Zuckerman, *supra* note 55.

⁴⁶⁴ See Biancotti & Ciocca, *supra* note 56; Borgogno & Colangelo, *supra* note 56; Kathuria & Globocnik, *supra* note 56; Van Loo, *Helping Buyers Beware*, *supra* note 56 at 1386; Rory Van Loo, *Digital Market Perfection*, *supra* note 56 at 873.

⁴⁶⁵ Romer, *supra* note 57.

⁴⁶⁶ For a distinction along these lines as “Two Models for Addressing Platform Power,” see Khan, *supra* note 10, at 790–802.

⁴⁶⁷ For a distinction along these lines as “Two Models for Addressing Platform Power,” see *id.*

specific regulation, while others place their bets on leveraging general concepts applicable to all types of market foreclosure. Hard rules and flexible standards play different roles in proposed frameworks.

These variations allow for countless combinations. Yet all measures have their specific strengths and drawbacks. None should be understood as an exclusive fix or all-powerful panacea. In the following Section, I will provide an overview of approaches currently discussed to address the foreclosure of digital markets. I will identify some of their shortcomings, when pursued in isolation, and argue for a comprehensive approach, as proposed by the recent House Majority Report and several antimonopoly advocates and policymakers before that.⁴⁶⁸ To be clear, the essential facilities doctrine, even in an expanded form, is no cure-all either. The doctrine, whether based on revived case law or legislative enactment, also features shortcomings and leaves loopholes, which will need to be addressed through other means. And the essential facilities doctrine is perfectly compatible with any of the other potential measures.⁴⁶⁹ In fact, the doctrine's flexible nature comes as advantage here: where competition is successfully revived through other means or where regulation grants access rights, at least to the extent the doctrine would, it simply ceases to apply.

Calls for break-ups of digital platforms have featured prominently in public discourse.⁴⁷⁰ When rooted in antitrust law, the case rests on alleged anticompetitive conduct. Commonly, the suggestion aims to reform the ownership structures of the firm in question and would result in the divestiture of certain assets. Break-ups follow the tradition of the most prominent antitrust cases in history, including the famous example of *Standard Oil*.⁴⁷¹ Break-ups might aim to undo previous mergers, as suggested in the context of Facebook, regionally compartmentalize a national

⁴⁶⁸ SUBCOMM. ON ANTITRUST, COM. AND ADMIN. L. OF THE H. COMM. ON THE JUDICIARY, 116TH CONG., *supra* note 12, at 377–405; Khan, *supra* note 10, at 790–802.

⁴⁶⁹ Guggenberger, *supra* note 5.

⁴⁷⁰ See TEACHOUT, *supra* note 51; Van Loo, *supra* note 51; Warren, *supra* note 52.

⁴⁷¹ See *Standard Oil Co. of New Jersey v. U.S.*, 221 U.S. 1 (1911).

conglomerate, as pursued in *Standard Oil*, or follow a logic of functional separation. In effect, the first two variations of break-up remedies aim at restoring competition in the primary market. The idea is that new independent companies will stand in competition with each other and, thus, no longer have market power to foreclose markets or to extract monopoly rents. While this approach has been successfully pursued in various industries, it might have shortcomings where infrastructure is defined by strong network effects and the characteristics of data and algorithms.

Three concerns stick out relating to digital platforms. First, the backend of digital platforms consists of a tightly knit network of databases. Data tends to be shared within the corporation and newly acquired competitors quickly get absorbed into the new parent company. “Un-scrambling the eggs” would be either impossible or very costly, or so the story goes.⁴⁷² Yet, these concerns are largely unfounded.⁴⁷³ Data’s value is rather short-lived, which means that existing and shared data sets constantly need to be updated. That is an opportunity for differentiation among the newly independent entities. Most importantly, corporations undergo constant internal restructuring and companies regularly spin off parts of the overall undertaking, as Rory Van Loo points out.⁴⁷⁴ Second and depending on their implementation and the regulatory environment, break-ups may diminish some of the value created by platforms as aggregators of network effects.⁴⁷⁵ When a commerce platform is split into smaller fragments, fewer buyers and sellers will be able to transact with each other. Transaction costs may increase. That said, interoperability requirements can mitigate these concerns. And even a trade-off in the form

⁴⁷² Rory Van Loo, *Stop with the Egg Metaphor in Discussing Big Tech Break-Ups*, THEHILL (July 29, 2020, 9:00 AM EDT), <https://perma.cc/DT9V-26HL> (criticizing the expression).

⁴⁷³ Van Loo, *supra* note 51.

⁴⁷⁴ *Id.*; Van Loo, *supra* note 472.

⁴⁷⁵ The creation of the essential facilities doctrine was driven by a concern of waste. *United States v. Terminal R.R. Ass'n of St. Louis*, 224 U.S. 383, 387 (1912) (“In the crowded section of a great city, however, if all construction were done independently, the waste in space and the increase in cost of construction would be very great.”)

of increased competition in the primary market at the expense of some network-based efficiencies might well be worthwhile.

The third concern relates to potential swift reconsolidation.⁴⁷⁶ In fact, policy proposals that exclusively or mainly rest on horizontal breakups as remedy for platform power tend to underestimate network effects—a major reason for antitrust scrutiny in the first place.⁴⁷⁷ Authorities and courts can easily prevent potential post-break-up mergers, one source of future reconsolidation. Though, current doctrine leaves them powerless against future organic growth and resulting consolidation.⁴⁷⁸ Even after a horizontal breakup, network effects will continue to force consolidation as far as the services remain substitutable. Insofar, a breakup might only turn the clock back and restart the competition for the markets.⁴⁷⁹ Within a short period, the market will likely tip again, and a new monopolistic platform will emerge.⁴⁸⁰ And still, horizontal divestitures can serve an important function as they, at least temporarily, reduce the economic and political power of dominant online platforms.⁴⁸¹ Moreover, the services offered by the spun off entities might not be fully substitutable. In that case, network effects could not exert their full consolidating potential and smaller, more specialized platforms might sustainably exert some competitive pressure on each other.

Next, take the suggestion for a functional separation of platforms and commerce, championed by Lina Khan.⁴⁸² This idea is related to the logic of horizontal break-ups as it also seeks structural remedies on the ownership level to realign incentives in the marketplace. The suggestion draws on historical examples of separation frameworks in the railroad,

⁴⁷⁶ See FUKUYAMA ET AL., *supra* note 41 at 20–21.

⁴⁷⁷ *Id.*; Fiona Scott Morton, *Why ‘Breaking Up’ Big Tech Probably Won’t Work*, WASH.POST (July 16, 2019), <https://perma.cc/3DEH-U39H>.

⁴⁷⁸ Scott Morton, *supra* note 477.

⁴⁷⁹ See FUKUYAMA ET AL., *supra* note 41 at 20–21.

⁴⁸⁰ *Id.*

⁴⁸¹ See PUB. CITIZEN, BIG TECH, BIG CASH: WASHINGTON’S NEW POWER PLAYERS (2021) (describing the immense lobbying efforts by the platform industry).

⁴⁸² Khan, *supra* note 6.

banking, television networks, and telecommunications sector.⁴⁸³ Khan takes issue with the dual role that the leading online platforms, Amazon, Facebook, Google, and Apple inhabit: as vertically integrated ecosystems, the platforms will always have incentives to tilt the marketplace in their favor.⁴⁸⁴ Functional separation requirements can indeed eliminate these conflicts of interests⁴⁸⁵ and spur innovation.⁴⁸⁶ If infrastructure providers or platform owners do not participate in the secondary market, they are not subject to the current incentives to discriminate in the marketplace. As Khan lays out, functional separation may also address broader concerns of monopolizing, from cross-financing within large conglomerates, to media diversity, and systemic resilience of critical infrastructure.⁴⁸⁷

While a separation regime would provide a potent tool to curtail platform power and to realign incentives, it would, pursued in isolation, leave gaps and may face similar challenges in the implementation stage as the essential facilities doctrine is said to encounter. First, a separation regime does not address the extraction of monopoly rents in the primary market. A platform isolated from commerce can still charge monopoly prices and impose monopoly terms on the secondary market. The monopolists' de facto tax on commerce⁴⁸⁸ would still impose dead-weight losses on a significant part of the economy. And, as shown above, tolerating persistent monopolies is far from optimal for innovation. Second, functional separation frameworks appear easier to administer than access rights; in reality, these can become complex, as well. This is because they purport to resemble the clarity of horizontal break-ups, while, in fact, functional separation regimes build on behavioral limitations. Two examples from the banking sector showcase this limitation: the famous

⁴⁸³ *Id.* at 1037–51.

⁴⁸⁴ *Id.* at 983–1015.

⁴⁸⁵ *Id.* at 1052–55.

⁴⁸⁶ *Id.* at 1066–67.

⁴⁸⁷ *Id.* at 1067–74.

⁴⁸⁸ ARNOLD, THE BOTTLENECKS OF BUSINESS, *supra* note 26.

Glass-Steagall legislation,⁴⁸⁹ which mandated a separation of deposit taking commercial banking and investment banking, and the more recent Volcker Rule, which mandates a separation of proprietary trading⁴⁹⁰ from all other forms banking activities. The former prohibits entities engaged in investment banking from taking deposits,⁴⁹¹ the latter bars deposit taking entities from proprietary trading.⁴⁹² The behavioral character of the limitation at the core of frameworks matters, even as the framework, overall, functions as “structural law.”⁴⁹³ They require ongoing supervision while a horizontal break-up of the ownership structure does not. Horizontal break-ups rely on competition as a disciplining force, instead; the general merger review is sufficient to prevent a reconsolidation of the former monopolist. In effect, functional separation frameworks can cause similar challenges as access rights where the boundaries between activities are fuzzy. Third, strict functional separation regimes relinquish efficiency gains through technological integration of the platform’s own services, based on increased convenience and security—a trade-off that can certainly be worth it. Yet, all these challenges remain manageable and, in light of the enormous value of mitigation conflicts on interests, functional separation frameworks should play a prominent role within a comprehensive reform agenda.

Next, take suggestions to outlaw certain problematic platform behavior, for example, self-preferencing or specific elements in the platforms’

⁴⁸⁹ The legislation is named after the ardent segregationist Senator Carter Glass and Representative Henry B. Steagall.

⁴⁹⁰ Defined in 12 U.S.C. § 1851(h)(4).

⁴⁹¹ Banking Act of 1933, 12 U.S.C. § 378(a)(1) (“[I]t shall be unlawful—(1) For any person [...] or [...] organization, engaged in the business of issuing, underwriting, selling, or distributing [...] stocks, bonds, debentures, notes, or other securities, to engage at the same time [...] in the business of receiving deposits subject to check or to repayment upon presentation of a passbook, certificate of deposit, or other evidence of debt, or upon request of the depositor.”)

⁴⁹² 12 U.S.C. § 1851 (“Unless otherwise provided in this section, a banking entity shall not—(A) engage in proprietary trading; or (B) acquire or retain any equity, partnership, or other ownership interest in or sponsor a hedge fund or a private equity fund.”).

⁴⁹³ See, John C. Coates, *The Volcker Rule as Structural Law: Implications for Cost-Benefit Analysis and Administrative Law*, 10 CAP. MKTS. L.J. 447, 450–55 (2015).

terms and conditions, such as most favored nation or arbitration clauses. Frequently, these proposals reflect technology-specific approaches as they only impose requirements on certain industries. The retracted 2015 Open Internet Order⁴⁹⁴ provides an example of such industry-specific, regulatory intervention, as it prevented Internet Service Providers from imposing certain types of discrimination when managing internet traffic.⁴⁹⁵ The recent proposal for a DMA in the EU showcases another such approach. Targeted regulation that addresses specific types of behavior can be very effective. The targeted approach inevitably comes at the price of general applicability and flexibility. And, nondiscrimination requirements or bans on certain terms of service do not upend the platform monopolies and, thus, fail to address the full potential of excessive monopoly rent extraction.

Mandatory data sharing paves another path toward more competition in digital platform markets.⁴⁹⁶ Platforms, especially Amazon Marketplace, could share the data they gather as aggregators of all transactions with the independent market participants. The hope is that access to the data would level the playing field between independent actors and the vertically integrated offers of platform providers themselves on the secondary markets. Participants in the secondary market, specifically merchants on Amazon Marketplace, would be afforded equal opportunity to compete with Amazon to advertise and improve their products. Data sharing centers around the insight that data are public goods that can be shared without losses from rivalry. The approach promises some improvements in areas of marketing, product development, and repair, where access to data creates significant obstacles to a level playing field. Yet, especially smaller merchants do not have the capacity to leverage the data, because they do not command computing power and algorithms that are comparable to the platform's facilities. Also, in many platform

⁴⁹⁴ Protecting and Promoting the Open Internet, 30 FCC Rcd. 5601 (7) (2015).

⁴⁹⁵ For a detailed account of the previous order Preserving the Open Internet, Broadband Industry Practices, 25 FCC Rcd 17905 (21) (2010), *see* van Schewick, *Network Neutrality and Quality of Service*, *supra* note 48, at 152–62.

⁴⁹⁶ Biancotti & Ciocca, *supra* note 56; Borgogno & Colangelo, *supra* note 56.

markets, access to data does not represent the only impediment to fair competition on the platform. Rankings on the platform, specific terms and conditions, and monopoly rent extraction do not depend on data exclusivity alone. Also, at least when unconditionally implemented, it raises privacy concerns which in turn limit the proposal's potential.⁴⁹⁷

Relatedly, several jurisdictions have implemented data portability requirements. At the intersection of privacy and competition policy, these rights allow users to migrate their data from one service to another. Examples of data portability rights can be found in the EU General Data Protection Regulation (GDPR)⁴⁹⁸ and the California Consumer Privacy Act.⁴⁹⁹ The ability to migrate data sets and profiles from one platform to another reduces barriers to entry for competing platforms, as users do not need to regenerate everything from scratch. In theory, this strengthens competition between platforms. In practice, data portability requirements have fallen short of their expectations and will continue to do so. First, provisions in the GDPR and the CCPA are inadequate for most commerce platforms, as they build on the concept of personal data and personal information, respectively, which is necessarily tied to natural persons and, thus, does not help small businesses on the platform markets.⁵⁰⁰ Second, a focus on the portability of data systemically underestimates the driving force of platform power, network effects. Third, attempts to reduce switching costs likely fail in light of the inertia of users, which is especially prevalent in zero price markets⁵⁰¹ with high externalities in the form of third-party privacy harms.⁵⁰²

Finally, consider isolated regulatory interoperability requirements which would force platforms to open their APIs and let competitors

⁴⁹⁷ Kathuria & Globocnik, *supra* note 56, at 14–23.

⁴⁹⁸ Regulation (EU) 2016/679, art. 20, 2016 O.J. (L119) 1, 19-20.

⁴⁹⁹ Cal. Civ. Code §§ 1798.100(d), 1798.130(a)(2).

⁵⁰⁰ See Regulation (EU) 2016/679, General Data Protection Regulation, art. 4(1), 2016 O.J. (L 119); Cal. Civ. Code § 1798.140(o)(1).

⁵⁰¹ Zero-price-markets are not zero-cost-markets. See John M. Newman, *The Myth of Free*, 86 GEO. WASH. L. REV. 513 (2018).

⁵⁰² See Omri Ben-Shahar, *Data Pollution*, 11 J. LEGAL ANALYSIS 104 (2019) (discussing externalities in the data economy); Bergemann et al., *supra* note 267.

participate in the network effects of the platform.⁵⁰³ As described above, these duties can play a significant role in reestablishing competition in the market for platforms. Mandatory interoperability directly addresses market entry barriers that stem from network effects. Though, in isolation, mandatory interoperability will likely prove insufficient to counter concentration of digital markets. First, single-homing customers, subscriptions, rebate models, algorithms, and characteristics of the data will continue to fuel concentration in the market for digital platforms. Second, interoperability mandates will inevitably remain limited to features that can be standardized. Thus, only competitors with identical or substantially similar technical features within the relevant market will be able to exert competitive pressures.

Overall, this Section has shown that restoring competition in digital markets will require a comprehensive toolkit. A revived, renewed, and expanded essential facilities doctrine fulfills a crucial function in this toolkit. It will flexibly fill the gaps left by any ex-ante regulation, cover emerging technologies, and limit the monopoly rent extraction by platforms. Specifically, the essential facilities doctrine grants access rights, where break-ups cannot sustainably guarantee competition, and it caps the extraction of monopoly rents, where functional separation provides insufficient remedies. The doctrine can ensure competition and further innovation in new markets that lack comprehensive regulatory frameworks. Finally, the revived, renewed, and expanded essential facilities doctrine is perfectly compatible with all other discussed remedies. And, where structural measures, in fact, reestablish competition, the flexible essential facilities doctrine will automatically step out of the way. By no means does the doctrine entrench monopoly power.⁵⁰⁴ To the contrary, it taxes size and dominance and, thus, naturally promotes nascent competition.⁵⁰⁵

⁵⁰³ See Palka, *supra* note 53.

⁵⁰⁴ Guggenberger, *supra* note 5.

⁵⁰⁵ *Id.*

B. Which Facilities are Essential and How Should They be Accessed?

Applying the essential facilities doctrine to digital platforms requires a definition of what exactly should be deemed “essential.” The concept of platforms itself is inherently difficult to define.⁵⁰⁶ In its recent DMA proposal, the European Commission offered an attempt to defining “core platforms services,” by enumerating different types of services the Commission aims to include in the Proposal.⁵⁰⁷ This Section cannot offer a universally applicable concept either. And the focus on *digital* platforms might, in fact, contribute to further obfuscation, as their infrastructural components often remain invisible and seamlessly integrate with the secondary market. Notably, digital platforms operate with varying degrees of integration. Both app stores and apps themselves are comprised of a combination of software and data that are accessed over the internet. Similarly, the boundaries between generic internet search and specific search services, such as price comparisons, restaurant recommendations, and even map services, can be fuzzy.

Addressing this challenge, Lina Khan rightly suggests shifting the attention away from technicalities and towards a functional understanding: “Given the challenge of offering a bounded definition of ‘dominant platform,’ any definition will likely be under- or over-inclusive. But any definition should seek to capture the degree of market power that the platform enjoys over users.”⁵⁰⁸ This raises the question, “[t]o what degree do other businesses depend on the platform to reach users, and what is the cost to businesses of avoiding this platform and using alternative

⁵⁰⁶ Khan, *supra* note 6, at 1080–81. For an apt positive definition of platforms, see Cohen, *supra* note 13, at 145. (“Platforms use technical protocols and centralized control to define networked spaces in which users can conduct a heterogeneous array of activities and to structure those spaces for ease of use.”)

⁵⁰⁷ *Proposal*, *supra* note 425, at 34–35 (Proposing art. 2[2]: “‘Core platform service’ means any of the following: [a] online intermediation services; [b] online search engines; [c] online social networking services; [d] video-sharing platform services; [e] number-independent interpersonal communication services; [f] operating systems; [g] cloud computing services; [h] advertising services, including any advertising networks, advertising exchanges and any other advertising intermediation services, provided by a provider of any of the core platform services listed in points [a] to [g].”).

⁵⁰⁸ Khan, *supra* note 6, at 1081.

channels?"⁵⁰⁹ A more granular version of this functional analysis can then identify the necessary preconditions for competitors to reach the secondary market in a way that allows them to compete on equal footing with the vertically integrated services provided by the platform.

Preconditions for a level playing field on the secondary market vary from platform to platform. Platforms inevitably define the level of the playing field via the rights it provides to its competitors relative to itself. In e-commerce, the most basic form of access is the listing of products. To compete effectively, however, merchants also depend on a fair product search and ranking process, equal access to favorable forms of display on the website, such as menu bars or Amazon's Buy Box. The "real estate" on the platform is essential for competitors.

The identification of the essential facility inevitably raises the question how to structure access rights to it. Sharing data as an essential facility⁵¹⁰ might help third-party vendors to some degree but remains insufficient. The lack of computational capacity among third party vendors, the inability to effectively leverage information on a platform controlled by another entity, and the limitations imposed by privacy regulations suggest a focus on the provision of marketing services, instead. Another condition for a level playing field is that platforms refrain from leveraging secret transactional data to undercut the independent merchants. Finally, independent merchants cannot reasonably be expected to replicate platforms' payment infrastructures, warehousing capacity, and delivery systems; and, in many instances, they are unlikely to find reasonable alternatives in the market that allowed them to compete with the logistical capacity of a platform like Amazon.

In the app store context, developers' success in the marketplace depends on their listing, which requires a security clearing and interoperability with the operating system. Under the essential facilities framework, denials of access based on legitimate security and privacy concerns

⁵⁰⁹ *Id.*

⁵¹⁰ See Abrahamson, *supra* note 5.

should be considered justified. A regulatory agency could check and challenge allegations of security or privacy flaws and assess their merits. In any case, Google and Apple should be prohibited from mandating any exchange of data that goes beyond what is imperative for the integration in the operating system and the security of the applications. As it relates to internet search, the facility is a combination of Google's algorithms and the display of results on Google's website. Again, the conditions for access must provide a level playing field among competitors. That entails equal access to attractive listings on the website.

C. Weighing Evidence, Defining Remedies and Learning from *U.S. v. Terminal Railroad Association*

As it stands, the plaintiff bears the burden to show that a facility is essential and cannot reasonably be duplicated. In the recent *American Express* decision, the Supreme Court even demanded that the plaintiff show harm on both sides of a two-sided market.⁵¹¹ To increase the effectiveness and the impact of the essential facilities doctrine, we should reverse the burden of proof for the doctrine's preconditions—at least beyond certain market share thresholds. In cases of persistent platform monopolies, courts should assume that the other conditions of the access rights are fulfilled. It would then fall on to the owner of the platform to provide sufficient evidence that the access-seeking competitor can rely on alternative means to access the market or that the denial of equal access was justified. As the owner knows best what it takes to create and operate the digital platform, they will be best suited to produce necessary evidence.

To properly define the appropriate remedies, let us re-examine *U.S. v. Terminal Railroad Association*.⁵¹² The Court did not set the conditions or rates for access to the facility but deferred to the parties and the lower courts to identify adequate terms and organizational structures. In doing so, the Court wisely deferred to the least cost drafters, the parties that

⁵¹¹ Ohio v. Am. Express Co., 138 S. Ct. 2274, 2284, 2303–4 (2018).

⁵¹² United States v. Terminal R.R. Ass'n of St. Louis, 224 U.S. 383 (1912).

would eventually need to operationalize the framework. The Court left a potential break-up on the table in case the Association did not comply with the Court's expectations. The threat of a break-up served as an incentive for the Association to reform its charter defining the criteria to admit competitors.

A renewed essential facilities doctrine can rely on the same mechanism when applied to digital platforms. Where access rights are preferable to or necessary complements of structural break-ups, authorities or courts could identify broad principles defining the substantial elements that the terms of access need to fulfill. If the monopolist fails to live up to these standards, courts could revert to demanding a breakup of the platform. Leaving room for such choice to the defendant also significantly reduces the type II error costs associated with the selection of the remedy. Where the defendant concludes that the preservation of the network effects is not worth the behavioral limitations, it can opt for a structural break-up. And who could assess the value of the network effects better than the defendant? In effect, authorities or courts do not need to enter into the business of drafting contracts for access seeking competitors where they do not see themselves in the position to do so.

D. Implementing a Renewed Essential Facilities Doctrine

A significant advantage of the doctrine lies in the fact that change can originate both from the courts and from the legislature.⁵¹³ In contrast to most other proposals, neither a revival nor an expansion of the essential facilities doctrine necessitates regulatory changes.⁵¹⁴ The Supreme Court derived the essential facilities doctrine from an interpretation of the Sherman Act and the Court has the power to renew it.⁵¹⁵ In fact, as the

⁵¹³ Additionally, the government, mainly in the form of the Department of Justice, the FTC, and states' attorneys general, plays a crucial part in advancing and the new standards.

⁵¹⁴ In that sense, it proves similar to the suggestions for functional separation or platforms and commerce. See Khan, *supra* note 6, at 1083.

⁵¹⁵ The *Erie* doctrine that significantly limits the development of federal case law does not apply to construing the Sherman Act.

Supreme Court in *Trinko* expressed its misgivings with the doctrine, but formally refrained from rejecting it, even lower courts could revive the relevant ideas. Recent decisions in *American Express* and *Sabre* may indicate that courts are not inclined to revive the doctrine soon, however. In any case, the courts' line of argumentation will prove unsustainable in the longer term: as the gap grows between antitrust doctrine on the one hand and advances in economic theory and empirics on the other hand,⁵¹⁶ the orthodoxies become harder and harder to maintain. Eventually, the arguments will become indefensible and change will thus become inevitable. If the federal judiciary remains inactive, state courts could fill the void—without violating federal preemption.⁵¹⁷

In case the courts fail to act, Congress can easily codify a renewed version of the essential facilities doctrine. Political majorities for antitrust reform have become perceivable. Over the last two years, antitrust has moved to centerstage in various political platforms across the aisle. Former contenders for the Democratic presidential nomination, namely Elizabeth Warren,⁵¹⁸ and Republican senators drove the agenda, albeit with different emphases. While it might be easy to dismiss high-profile individuals as outliers, the ultimate sign of a broader consensus stems from growing support for antitrust enforcement by parts of the business community.⁵¹⁹ Today, small and medium-sized businesses often find themselves excluded from the marketplaces they aim to access. While the traditional divide in antitrust policy mainly separated businesses and consumers, the emerging gulf pits incumbents of highly concentrated industries against the rest. This shift creates windows of opportunity for new political alliances and reform. And, if the momentum should not

⁵¹⁶ Wu, *supra* note 324, at 117–18.

⁵¹⁷ See *Rice v. Norman Williams Co.*, 458 U.S. 654, 659–61 (1982); *Exxon Corp. v. Governor of Maryland*, 437 U.S. 117, 132–35.

⁵¹⁸ Warren, *supra* note 52.

⁵¹⁹ Naomi Nix, *Retailers Eager to Lodge Antitrust Complaints Against Amazon and Google*, BLOOMBERG (July 1, 2019, 12:59 PM PDT), <https://perma.cc/7GRQ-88U2>; Retail Industry Leaders Association, Comment Letter on Competition and Consumer Protection in the 21st Century Hearings (Project Number P181201) (June 30, 2019), <https://perma.cc/7GAM-LN2W>.

suffice for regulatory action on the federal level, individual states could step up. The recent California Consumer Privacy Act and the soon-to-come-into-force California Privacy Rights Act of 2020 demonstrate that State action can drive the regulatory agenda, where the federal level lags. Creating state-level essential facility claims for in-state business (of digital platforms) remains well inside the boundaries of federal pre-emption of antitrust law.⁵²⁰ And several bills targeting the app stores are already on their way.⁵²¹

Codifying the essential facilities doctrine will prove easier than drawing up legislation from scratch. After all, any potential essential facilities bill can resort to more than one hundred years of legal and regulatory discourse. As showcased by the bill for an Anticompetitive Exclusionary Conduct Prevention Act of 2020, introduced by Senator Klobuchar, legislative proposals can pick up on standing case law in a very targeted manner. Furthermore, the legislature could build on reforms in other jurisdictions such as the very recent fine-tuning of the German Act against Restraints of Competition. Also, the essential facilities doctrine is not radical, after all, and, its substance, could win supporters all across the political spectrum. Created in the Lochner-era,⁵²² it lived through the New Deal, and survived the early years of the ascent of Chicago-school ideology. The doctrine was specifically created as a less intrusive remedy relative to a horizontal breakup.⁵²³ Moreover, the essential facilities doctrine contains a deeply moral core, that of a participatory right in the digital economy.

Finally, effective antitrust enforcement requires expertise and resources, which may call for a specialized agency that can serve as the *de facto* digital regulator and that can define the technical parameters of the

⁵²⁰ See *Rice*, 458 U.S. at 659–61; *Exxon Corp.*, 437 U.S. at 132–35.

⁵²¹ Leah Nylen, *Apple, Google App Store Fights Move to the States*, POLITICO (Mar. 3, 2021, 3:57 PM EST), <https://perma.cc/ZS7P-SY26>.

⁵²² The Lochner-era of Supreme Court jurisprudence is named after *Lochner v. New York*, 198 U.S. 45 (1905), a case that invalidated a statute limiting the maximum working hours of bakers and since stands for a libertarian approach interpretation of the Constitutional limits on the power of the state to regulate the economy.

⁵²³ *United States v. Terminal Railroad Ass'n of St. Louis*, 224 U.S. 383, 409 (1912).

non-discrimination and the interoperability regimes.⁵²⁴ Also, the incumbents know that enforcement budgets matter; in fact, while Microsoft was under intense scrutiny, it tried to push Congress to reduce the funding for DOJ's antitrust division.⁵²⁵ When Thurman Arnold laid out his case for the unprecedented scale-up of the DOJ's Antitrust Division personnel, he contended that "[y]ou can't police a country as large as America with a corporal's guard."⁵²⁶ Arnold's words aimed at the industrial giants of the first half of the 20th century remain just as true today.

CONCLUSION

Digital platforms' chokehold on the economy suffocates competition, forecloses markets, stifles innovation, and, ultimately, harms consumers. The essential facilities doctrine provides a crucial element of a comprehensive toolkit to rein in the gatekeeper power of Big Tech. After decades of restricting antitrust enforcement, it is high time to revive, renew, and expand the essential facilities doctrine to open up the infrastructure underlying digital commerce and to create an open, innovative, and participatory economy.

⁵²⁴ See Rory Van Loo, *Rise of the Digital Regulator*, 66 DUKE L.J. 1267 (2017). For the importance of regulatory monitoring, see Rory Van Loo, *The Missing Regulatory State: Monitoring Businesses in an Age of Surveillance*, 72 VAND. L. REV. 1563 (2019).

⁵²⁵ BAKER, *supra* note 48, at 198.

⁵²⁶ Arnold, *supra* note 2.