ESSENTIAL PLATFORMS

Nikolas Guggenberger*

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 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. The clear 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.

* Executive Director, Yale Information Society Project, Research Scholar & Lecturer in Law, Yale Law School, and Affiliate, Berkman Klein Center for Internet & Society. For valuable advice and feedback, thanks to Jack Balkin, Alvin Klevorick, Mark Lemley, Daniel Markovits, John Newman, Thomas Nachbar, Przemyslaw Palka, Francesca Procaccini, Fiona Scott Morton, Rory Van Loo, and the participants of Yale Information Society Project's Writing Workshop and the Junior Tech Law Scholars WIP Workshop. Special thanks to Adam Kinkley for excellent research assistance.

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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, 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 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 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] Indeed, similarities between railroads and digital platforms have not escaped Congress.

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[1] United States v. Terminal Railroad Ass'n of St. Louis, 224 U.S. 383, 224–25 (1912).

[2] *See*, Thurman Arnold, *The Anitrust Laws, Their Past and Future* 11 (Aug. 1938).

[3] *Terminal Railroad Ass'n*, 224 U.S. at 410.

[4] *Id.* at 409–12.

[5] Brett Frischmann & Spencer Weber Waller, *Revitalizing Essential Facilities*, 75 ANTITRUST LAW JOURNAL 1, 6 (2008); Marina Lao, *Search, Essential Facilities, and the Antitrust Duty to Deal*, 11 NORTHWESTERN JOURNAL OF TECHNOLOGY AND INTELLECTUAL PROPERTY 276, 288 (2013); Robert Pitofsky et al., *The Essential Facilities Doctrine under U.S. Antitrust Law*, 70 ANTITRUST LAW JOURNAL 443, 445 (2002); James R. Ratner, *Should There Be an Essential Facility Doctrine*, 21 U.C. DAVIS L. REV. 327, 327 (1988); Zachary Abrahamson, *Essential Data*, 124 YALE L.J. 867, 869 (2014).

[6] *Online Platforms and Market Power, Part 6: Examining the Dominance of Amazon, Apple, Facebook, and Google: Hearing Before the Subcomm. on Antitrust, Commercial, and Administrative Law of the H. Comm. on the Judiciary* (2020) (statement of Jerrold Nadler, Chair, H. Comm. on the Judiciary). 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://www.nytimes.com/2020/02/10/opinion/amazon-economy.html.)

[7] Hooton Christopher, *Measuring The U.S. Internet Sector: 2019* 12 (Sep. 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), Kevin Barefoot et al., *Measuring the Digital Economy*, 99 JOURNAL OF THE U.S. BUREAU OF ECONOMIC ANALYSIS 1, 6–7 (May 2019).

[8] JULIE E. COHEN, BETWEEN TRUTH AND POWER: THE LEGAL CONSTRUCTIONS OF INFORMATIONAL CAPITALISM 39 (Oxford University Press 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.")

At the recent 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. 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."[9]

To maximize profits, digital platforms follow in the footsteps of the railroads and assume dual roles. On the one hand, platforms create and curate markets, like Amazon Marketplace. They provide infrastructure[10] and act as umpires, developing and enforcing governing norms by which platform users must abide.[11] 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. As an example, Amazon sells products in its own name on Amazon Marketplace and competes with third-party sellers on the platform. 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.[12] 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.[13] Google and Apple app stores also give preference to their own applications in search listings and drive customers away from independent developers. 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

[9] *Online Platforms and Market Power, Part 6: Examining the Dominance of Amazon, Apple, Facebook, and Google: Hearing Before the Subcomm. on Antitrust, Commercial, and Administrative Law of the H. Comm. on the Judiciary*, *supra* (statement of Jerrold Nadler, Chair, H. Comm. on the Judiciary).

[10] 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 GEORGETOWN LAW TECHNOLOGY REVIEW 234 (2018).Distinguishing platforms, networks, and infrastructure, *see* Julie E. Cohen, *Law for the Platform Economy*, 51 U.C. DAVIS LAW REVIEW 133, 143–45 (2017).

[11] Thomas Kadri, *Digital Gatekeepers*, 99 TEX. L. REV. forthcoming (2020); Lina M. Khan, *The Separation of Platforms and Commerce*, 119 COLUM. L. REV. 973, 1065 (2019); Rory Van Loo, *Federal Rules of Platform Procedure*, U. CHI. L. REV. forthcoming (2020); Rory Van Loo, *The New Gatekeepers: Private Firms as Public Enforcers*, 106 VA. L. REV. 467, 474–80 (2020).

[12] Competition & Markets Authority, *Online Platforms and Digital Advertising: Market Study Final Report* 109–14 (Jul. 2020); Adrianne Jeffries & Leon Yin, *Google's Top Search Result? Surprise! It's Google – The Markup*, https://themarkup.org/google-the-giant/2020/07/28/google-search-results-prioritize-google-products-over-competitors (last visited Aug. 11, 2020); Fiona Scott Morton & David C Dinielli, *Roadmap for a Monopolization Case Against Google Regarding the Search Market* 46, 31–36 (Jun. 2020).

[13] Dana Mattioli, *Amazon Scooped Up Data From Its Own Sellers to Launch Competing Products*, WALL ST. J. (Apr. 24, 2020), https://www.wsj.com/articles/amazon-scooped-up-data-from-its-own-sellers-to-launch-competing-products-11587650015; Stacey Mitchell & Shaoul Sussman, *How Amazon Rigs Its Shopping Algorithm*, PRO MARKET (Nov. 6, 2019), https://promarket.org/2019/11/06/how-amazon-rigs-its-shopping-algorithm/.

stores.[14] In fact, these discriminatory and exclusionary practices are systemic. The mountains of documents gathered by an ongoing House investigation provide ample further firsthand accounts of Big Tech's predatory behavior from countless internal emails and papers.[15]

This platform dominance 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.[16] 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.[17] This effect creates a chicken-and-egg problem for nascent competitors:[18] They cannot attract consumers because they lack vendors and cannot attract vendors because they lack consumers.[19] The resulting enormous barriers to entry for nascent competitors isolates incumbent platforms from competitive forces that normally 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."[20] He points out that "economic toll bridges have been familiar features of American life since Ida Tarbell wrote the history of the Rockefeller dynasty."[21] 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."[22] Apple and Google, for example, charge fees of

[14] Compl., Epic Games, Inc. v Apple, Inc., 13. Aug. 2020, Compl., Epic, Inc. v. Google, 13. Aug. 2020 (District Court); Dieter Bohn, *Fortnite for Android Has Also Been Kicked off the Google Play Store*, THE VERGE, https://www.theverge.com/2020/8/13/21368079/fortnite-epic-android-banned-google-play-app-store-rule-violation (last visited Aug. 14, 2020); Andrew Webster, *Epic Offers New Direct Payment in Fortnite on IOS and Android to Get around App Store Fees*, THE VERGE, https://www.theverge.com/2020/8/13/21366259/epic-fortnite-vbucks-mega-drop-discount-iphone-android (last visited Aug. 14, 2020).

[15] *Online Platforms and Market Power, Part 6: Examining the Dominance of Amazon, Apple, Facebook, and Google: Hearing Before the Subcomm. on Antitrust, Commercial, and Administrative Law of the H. Comm. on the Judiciary* (2020). (Repository of subpoenaed documents, https://judiciary.house.gov/online-platforms-and-market-power/.) See, Tim Wu, *What Years of Emails and Texts Reveal About Your Friendly Tech Companies*, N.Y. TIMES (Aug. 4, 2020), https://www.nytimes.com/2020/08/04/opinion/amazon-facebook-congressional-hearings.html.

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

[17] CARL SHAPIRO & HAL R. VARIAN, INFORMATION RULES: A STRATEGIC GUIDE TO THE NETWORK ECONOMY 184 (Harvard Business School Press 1999).

[18] See, C. Scott Hemphill & Tim Wu, *Nascent Competitors*, forthcoming UNIVERSITY OF PENNSLYVANIA LAW REVIEW (2020), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3624058.

[19] SHAPIRO & VARIAN, *supra* note 17, at 184.

[20] Thurman Arnold, *An Inquiry into the Monopoly Issue*, THE NEW YORK TIMES MAGAZINE, 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 W. ARNOLD, THE BOTTLENECKS OF BUSINESS 58, 127, 179, 211, 219, 224, 272 (Reynal & Hitchcock 1940).

[21] Thurman Arnold, *supra* note 20, at 1. Arnold refers to the seminal book, IDA M. TARBELL, THE HISTORY OF THE STANDARD OIL COMPANY (McClure, Phillips & Co. 1904).

[22] Thurman Arnold, *supra* note 20. See, *Online Platforms and Market Power, Part 6: Examining the Dominance of Amazon, Apple, Facebook, and Google: Hearing Before the Subcomm. on Antitrust, Commercial, and Administrative Law of the H. Comm. on the Judiciary* (2020).

up to 30 % for in-app purchase over their app stores platforms[23]—presumably far exceeding competitive levels. 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.

The clear remedy, then and today, is to grant competitors equal and fair access to essential infrastructure for commerce. 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. 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 excessive judicial trust in self-correcting markets and the ensuing curtailment of antitrust enforcement. Following decades of anti-enforcement commentary from academics, policymakers, and industry groups, the courts clipped the doctrine's wing beginning in the late 1980's and throughout the 1990s.[24] 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*.[25] The Court brought the essential facilities doctrine to a halt. While essential facilities claims have not been considered promising lately,[26] the tide might be about to turn—especially with the legislature's newfound interest in opening digital markets.

It is high time to revive, renew, and expand the essential facilities doctrine to address apparent market foreclosures in the digital economy. As with toll bridges, re-establishing competition as a process to define the access conditions is not always possible. And even where it is theoretically possible, it might not constitute the optimal policy response, nor suffice to create the kind of digital ecosystem we desire. This is where the essential facilities doctrine can once again open markets while preserving network-based efficiencies. The doctrine's proven and tested approach will 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."[27] Arnold's lines, penned almost 80 years ago, could not ring more true 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

[23] Jonathan Borck et al., *Apple's App Store and Other Digital Marketplaces: A Comparison of Commission Rates* (Jul. 2020); Google Support, *Service Fees - Play Console Help*, https://support.google.com/googleplay/android-developer/answer/112622?hl=en (last visited Aug. 14, 2020).

[24] *See*, Illinois, ex rel. Burris v. Panhandle Eastern Pipeline Co., 935 F.2d 1469 (7th Cir. 1991); Alaska Airlines v. United Airlines, 948 F.2d 536 (9th Cir. 1991).

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

[26] Khan, *supra* note 11, at 1027–33.

[27] Thurman Arnold, *supra* note 20.

problems in the sense that they make "[t]hey make it more difficult for new technology companies to compete."[28]

Like the Supreme Court of 1912, we face fundamental questions about the concentration of private power and its limits 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 strives? 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 and its distribution in the political economy.[29] Methodologically, it draws from industrial organization,[30] intellectual property and innovation economics,[31] and (doctrinal) antitrust analysis.[32]

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

[28] Knight Foundation & Gallup, *Techlash? America's Growing Concern With Major Technology Companies* 13–14 (2020).

[29] *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.

[30] Daniel A. Ackerberg & Gautam Gowrisankaran, *Quantifying Equilibrium Network Externalities in the ACH Banking Industry*, 37 RAND J. ECON. 738 (2006); Armstrong, *supra* note 16; Jean-Pierre H. Dubé et al., *Tipping and Concentration in Markets with Indirect Network Effects*, 29 MARKETING SCIENCE 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 (Edward Elger 2013); Michael L Katz & Carl Shapiro, *Systems Competition and Network Effects*, 8 JOURNAL OF ECONOMIC PERSPECTIVES 93 (May 1994); Michael L. Katz & Carl Shapiro, *Network Externalities, Competition, and Compatibility*, 75 THE AMERICAN ECONOMIC REVIEW 424 (1985); Harikesh Nair et al., *Empirical Analysis of Indirect Network Effects in the Market for Personal Digital Assistants*, 2 QUANTITATIVE MARKETING AND ECONOMICS 23 (Springer 2004); Jean-Charles Rochet & Jean Tirole, *Platform Competition in Two-Sided Markets*, 1 JOURNAL OF THE EUROPEAN ECONOMIC ASSOCIATION 990 (2003); Marc Rysman, *The Economics of Two-Sided Markets*, 23 JOURNAL OF ECONOMIC PERSPECTIVES 125 (2009); Ulrich Witt, *"Lock-in" vs. "Critical Masses" — Industrial Change under Network Externalities*, 15 INTERNATIONAL JOURNAL OF INDUSTRIAL ORGANIZATION 753 (1997).

[31] Chien-Fu Chou & Oz Shy, *New Product Development and the Optimal Duration of Patents*, 57 SOUTHERN ECONOMIC JOURNAL 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).

[32] JONATHAN B. BAKER, THE ANTITRUST PARADIGM: RESTORING A COMPETITIVE ECONOMY (Harvard University Press 2019); ROBERT H. BORK, THE ANTITRUST PARADOX: A POLICY AT WAR WITH ITSELF (Basic Books 1978); BARBARA VAN SCHEWICK, INTERNET ARCHITECTURE AND INNOVATION (MIT Press 2010); Abrahamson, *supra* note 5; Phillip Areeda, *Essential Facilities: An Epithet in Need of Limiting Principles*, 58 ANTITRUST LAW JOURNAL 841 (1989); 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 18; Khan, *supra* note 11; Lina M. Khan, *Amazon's Antitrust Paradox*, 126 YALE L.J. 710 (2017); Abbott B. Lipsky & Gregory J. Sidak, *Essential Facilities*, 51 STAN. L. REV. 1187 (1999); Dina Srinivasan, *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 - The Future of Monopoly and Monopolization Symposium*, 2008 WIS. L. REV. 359 (2008).

for reasonable alternatives. By rebalancing incentives for dynamic innovation and allocation, this approach will contribute to a sustainable digital economy. As such, the argument makes a timely contribution as levels of concentration in the economy and markups of companies rise,[33] consumer prices in the U.S. exceeded those in comparable economies,[34] 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,[35] tighter merger reviews,[36] regulatory interoperability requirements,[37] non-discrimination rules,[38] public utility frameworks or digital public infrastructure,[39] data sharing mandates,[40] the functional separation of platforms and commerce,[41] and reforms to the tax code,[42] to name the most prominent proposals. After all, none of these proposals manages to address all challenges posed by digital platforms—especially where network effects would organically drive rapid consolidation and allow for monopoly rent extraction from digital commerce.[43]

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

[33] *See*, Steven Berry et al., *Do Increasing Markups Matter? Lessons from Empirical Industrial Organization*, 33 THE JOURNAL OF ECONOMIC PERSPECTIVES 44 (2019).

[34] THOMAS PHILIPPON, THE GREAT REVERSAL: HOW AMERICA GAVE UP ON FREE MARKETS (Harvard University Press 2019).

[35] Rory Van Loo, *In Defense of Breakups: Administering a "Radical" Remedy*, forthcoming CORNELL L. REV. (Aug. 2020); ZEPHYR TEACHOUT, BREAK 'EM UP: RECOVERING OUR FREEDOM FROM BIG AG, BIG TECH, AND BIG MONEY (All Points Books First edition ed. 2020).

[36] Hemphill & Wu, *supra* note 18, at 16–20.

[37] Competition & Markets Authority, *supra* note 12, at 370–74; Przemysław Palka, *The World of Fifty (Interoperable) Facebooks*, 51 SETON HALL L. REV. forthcoming (2021).

[38] *See*, van Schewick, *supra* note 32.

[39] Rahman, *The New Utilities*, *supra* note 10; Rahman, *Regulating Informational Infrastructure*, *supra* note 10; Ethan Zuckerman, *The Case for Digital Public Infrastructure* (Jan. 17, 2020), https://knightcolumbia.org/content/the-case-for-digital-public-infrastructure.

[40] *See*, Oscar Borgogno & Giuseppe Colangelo, *The Data Sharing Paradox: BigTechs in Finance*, forthcoming EUROPEAN COMPETITION JOURNAL (2020); Claudia Biancotti & Paolo Ciocca, *Opening Internet Monopolies to Competition with Data Sharing Mandates* (Apr. 2019); Vikas Kathuria & Jure Globocnik, *Exclusionary Conduct in Data-Driven Markets: Limitations of Data Sharing Remedy*, JOURNAL OF ANTITRUST ENFORCEMENT (Jan. 2020).

[41] Khan, *supra* note 11; Elizabeth Warren, *Here's How We Can Break up Big Tech*, MEDIUM (Mar. 8, 2019), https://medium.com/@teamwarren/heres-how-we-can-break-up-big-tech-9ad9e0da324c.

[42] Paul Romer, *A Tax That Could Fix Big Tech*, N.Y. TIMES (May 6, 2019), https://www.nytimes.com/2019/05/06/opinion/tax-facebook-google.html.

[43] Borgogno & Colangelo, *supra* note 40; Mark A. Lemley & Andrew McCreary, *Silicon Valley Needs to Build out, Not Cash Out*, FORTUNE, https://fortune.com/2020/03/09/ipo-vc-antitrust-silicon-valley/. (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.")

appropriate amortization period, beginning with the tipping of the market,[44] antitrust enforcers must upend platform-monopolies entirely—without breaking up network infrastructures. 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 infrastructure remains constrained by its surroundings. For the railroads in St. Louis, that was the Mississippi River.[45] 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 reward innovation, but only form barriers to entry that foreclose markets. And where the network effects outweigh the impact of innovation, worse quality prevails 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,[46] 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: "The 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 get to thrive."[47]

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 of platforms monopoly power: network effects in two-sided markets. Part II traces the development of the essential facilities doctrine and its application by the

[44] *See*, Dubé et al., *supra* note 30, at 240; Michael L Katz & Shapiro, *supra* note 30, at 105–6. (Tipping "is the tendency of one system to pull away from its rivals in popularity once it has gained an initial edge.")

[45] United States v. Terminal Railroad Ass'n of St. Louis, 224 U.S. 383, 396 (1912).

[46] Sanjukta Paul, *Antitrust as Allocator of Coordination Rights*, 67 UCLA L. REV. 378, 401–9 (2020).

[47] *Online Platforms and Market Power, Part 6: Examining the Dominance of Amazon, Apple, Facebook, and Google: Hearing Before the Subcomm. on Antitrust, Commercial, and Administrative Law of the H. Comm. on the Judiciary* (2020) (statement of Pramila Jayapal, Member, H. Comm. on the Judiciary).

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"[48] from the late 1980s to its *de facto* abandonment in 2004, and new impulses from the 2018 Supreme Court decision in *American Express*[49] and the 2020 District Court decision in *Sabre*.[50] 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 wider tunnel might attract disproportionately more additional traffic and 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 her 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.[51] Currently, the platform picks the winners and losers. They do everything in their power to give their own services a leg up. Markets on the platform do not resemble level playing fields, in which the quality and the price of the 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,

[48] Frischmann & Waller, *supra* note 5, at 8–10.

[49] Ohio v. Am. Express Co., 2018 138 S. Ct. 2274.

[50] United States v. Sabre Corp., No. CV 19-1548-LPS, 2020 WL 1855433 (D. Delaware: District Court, Third Circuit Apr. 7, 2020).

[51] van Schewick, *supra* note 32, at 24, 52, 107.

foreclose markets and extract monopoly rents. In short, the secondary markets do not provide allocative efficiency or contribute to distributive equity.

A. Platforms as "Toll Bridges" for Commerce[52]

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.[53] They have gained systemic relevance and shape the global economy. Seven out of ten of the most valuable companies globally operate digital platforms,[54] up from five in 2015.[55] 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.[56] 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."[57] Markets for digital platforms are highly concentrated in many sectors. Both, supply and the demand side access to the digital economy depend on platforms.[58] 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 on an ever-larger section of the overall economy. Their chokehold on downstream markets infers 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

[52] See, Thurman Arnold, *supra* note 20.

[53] COHEN, *supra* note 8, at 41; Cohen, *supra* note 10, at 143.

[54] Forbes, The 100 largest companies in the world by market value in 2019 (in billion U.S. dollars) Statista, https://www.statista.com/statistics/263264/top-companies-in-the-world-by-market-value/ (last visited August 05, 2020)

[55] Feng Zhu & Nathan Furr, *Products to Platforms: Making the Leap*, HARVARD BUSINESS REVIEW, 2016, at 3, 4.

[56] Rochet & Tirole, *supra* note 30. See, Rysman, *supra* note 30, at 125.

[57] COHEN, *supra* note 8, at 41.

[58] *Id.*

operator, and Facebook as a social media platform. Neither the music streaming service Spotify nor the game developer Epic can adequately reach their customers without the app stores. And many applications build on their access to Facebook's data. Independent businesses have no practical or reasonable alternative.[59] Overall, current market power held by platform monopolists is sufficient reason for regulatory intervention. The potential of abuse alone warrants legal safeguards. The ample evidence of actual abuses underscores the urgency of a remedy and proves that the fear of the platforms' power is indeed justified.

1. Retail E-Commerce: Amazon

E-commerce has far outperformed the overall retail sector over the last decade and remains subject to dynamic growth. The COVID-19 pandemic further accelerated the shift online.[60] 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 % and computer & consumer electronics at 50%, for example.[61] At the lower end of the spectrum, only 4% of food & beverages and a 5% of auto & parts are sold through the Internet.[62] Yet, the categories lagging behind are set to show the largest growth rates in 2020, 59% for food & beverage and 32% for health, personal care & beauty sales.[63]

Functionally, the Amazon ecosystem consists of two main elements—the platform and commerce, to use Lina Khan's understanding of vertically integrated platforms.[64] 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.[65] 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 the third-party vendors. While Amazons started as a pure retailer, its Marketplace has attracted a total of 8.7 million sellers globally, of which 2.2 million are active.[66] The platform's U.S. business, Amazon.com, is home to 461,000 active sellers as of August 2020.[67] Today, Marketplace accounts for 52 % of all units sold on Amazon.[68] Its appeal to merchants does not come as a surprise. Amazon offers incredibly low market entry barriers for vendors. For example, the majority of

[59] See, United States v. Terminal Railroad Ass'n of St. Louis, 224 U.S. 383, 397 (1912); MCI Communications Corp. v. American Tel. & Tel. Co., 708 F.2d 1081, 1132–33 (7th Cir. 1983).

[60] Andrew Lipsman, *US Ecommerce by Category 2020: How the Pandemic Is Reshaping the Product Category Landscape* 6 (Jun. 2020).

[61] *Id.* at 7.

[62] *Id.*

[63] *Id.* at 6.

[64] Khan, *supra* note 11, at 985–92.

[65] Jungle Scout, *The State of the Amazon Seller 2020* 8 (2020).

[66] *Number of Sellers on Amazon Marketplace*, MARKETPLACE PULSE, https://www.marketplacepulse.com/amazon/number-of-sellers (last visited Aug. 8, 2020).

[67] *Id.*

[68] Amazon, Percentage of paid units sold by third-party sellers on Amazon platform as of 1st quarter 2020 Statista, https://www.statista.com/statistics/259782/third-party-seller-share-of-amazon-platform/ (last visited Aug. 09, 2020).

merchants on Amazon, 59% 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.[69] These numbers are all the more impressive as 60% of all vendors lacked prior experience as e-commerce entrepreneurs[70]—an example of how low market entry barriers strengthen positive competition and, ultimately, benefit society.

Amazon is the uncontested leader in e-commerce in the U.S. (and Europe).[71] In July 2020, Amazon reported net sales for the second quarter of just short of $89 billion.[72] This is a 40 % increase over 2019,[73] far exceeded the market expectations, and let Amazon's stocks further soar.[74] As of May 2020, the e-commerce analyst eMarketer estimated Amazon's share of overall retail e-commerce in the U.S. at 38 %.[75] The estimate dwarfs those of its contenders.[76] Yet, while this metric has been central in public and academic discourse, it paints the wrong 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 market share of 6 %, less than one sixth that of Amazon.[77] Moreover, the top 10 in retail e-commerce contain several specialty vendors, such as Apple with 4 % market share, focusing on digital products.

Second, "retail e-commerce" does not reflect an adequate product market definition for the purposes of antitrust law.[78] And Jeff Bezos' 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.[79] The relevant market rather depends on whether products are substitutes for each other, meaning whether they are "reasonably interchangeable."[80] Lawnmowers, for example, are by no means interchangeable with books, and Wayfair selling rugs does not put

[69] Jungle Scout, *supra* note 65, at 17.

[70] *Id.*

[71] Lipsman, *supra* note 60, at 7–8.

[72] *Amazon.Com, Inc. Quarterly Report (Form Q-10)* 4 (Jul. 2020).

[73] *Id.*

[74] Annie Palmer, *Amazon Sales Soar as Pandemic Fuels Online Shopping*, CNBC, https://www.cnbc.com/2020/07/30/amazon-amzn-earnings-q2-2020.html (last visited Aug. 6, 2020).

[75] Andrew Lipsman & Cindy Liu, *US Ecommerce 2020: Coronavirus Boosts Ecommerce Forecast and Will Accelerate Channel-Shift* 7–8 (Jun. 2020).

[76] Jay Greene & Abha Bhattari, *Amazon's Virus Stumbles Have Been a Boon for Walmart and Target*, WASH. POST, https://www.washingtonpost.com/technology/2020/07/30/amazon-struggles-coronavirus/ (last visited Aug. 6, 2020); Lipsman, *supra* note 60, at 7–8.

[77] Lipsman, *supra* note 60, at 7–8; Lipsman & Liu, *supra* note 75, at 7–8.

[78] Priya Anand, *What's Amazon's Share of Retail? Depends Who You Ask*, INFO., https://www.theinformation.com/articles/whats-amazons-share-of-retail-depends-who-you-ask (last visited Aug. 9, 2020) (quoting Matt Stoller).

[79] *Online Platforms and Market Power, Part 6: Examining the Dominance of Amazon, Apple, Facebook, and Google: Hearing Before the Subcomm. on Antitrust, Commercial, and Administrative Law of the H. Comm. on the Judiciary* (2020) (statement of Jeff Bezos, CEO of Amazon, Inc.).

[80] United States v. Du Pont & 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 a group of similar products that are not substituted as a consequence of a 5-10 % increase in price form the relevant product market.

competitive pressure on Amazon's offering of TVs. Indeed, Amazon's market share differs drastically by product category: Amazon sells 79 % of all books, music & video, 45 % of all computer & consumer electronics, and 42 % of toys & hobby items sold online, but only 14 % of auto and parts and 24 % of food and beverages sold online.[81]

Third, consider the third-party merchant's dependence on Amazon as infrastructure for commerce. In the recent House hearing, Antitrust Subcommittee Chair Cicilline recounted interviews conducted as part of the House investigation into anticompetitive: "One small business owner that we interviewed described it this way, and I quote: 'We're stuck. We don't have a choice, but to sell through Amazon.' Another said, and I quote: 'They've never been a great partner, but you have to work with them.'"[82]

The merchants are right in their assessment. There is indeed no practical alternative[83] 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 reinforces 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.[84] 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.[85]

53% of vendors see themselves in direct competition with Amazon's products.[86] 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.[87] It comes as no surprise that Buy Box accounts for 80 to 90 % of all sales.[88] Only a fraction of customers, an estimated 17 %, even consider the offers of other sellers. Amazon's proprietary and secret algorithms[89] admit offers based on a set of criteria, including price and performance metrics, such as ratings, response times, and delivery speeds.[90] (Amazon does not allow for rating of its fulfillment.)[91] While some of the determining factors certainly

[81] Lipsman, *supra* note 60, at 8.

[82] *Online Platforms and Market Power, Part 6: Examining the Dominance of Amazon, Apple, Facebook, and Google: Hearing Before the Subcomm. on Antitrust, Commercial, and Administrative Law of the H. Comm. on the Judiciary*, *supra* (statement of David Cicilline, Chair, H. Subcomm. on Antitrust, Commercial, and Administrative Law).

[83] *See*, MCI Communications Corp. v. American Tel. & Tel. Co., 708 F.2d 1081, 1132–33 (7th Cir. 1983).

[84] Fortune, Number of Amazon Prime members in the United States as of December 2019 (in millions) Statista, https://www.statista.com/statistics/546894/number-of-amazon-prime-paying-members/ (last visited August 07, 2020).

[85] Khan, *supra* note 32, at 750–53.

[86] Jungle Scout, *supra* note 65, at 24.

[87] Dave Hamrick, *Amazon Buy Box: How to Win With Our 2020 Step-by-Step Guide*, JUNGLE SCOUT, https://www.junglescout.com/blog/how-to-win-the-buy-box/ (last visited Aug. 9, 2020).

[88] repricerexpress, *How to Win the Amazon Buy Box in 2020* 4 (Apr. 2020); Leanna Zeibak, *How to Win the Amazon Buy Box [2020 Update]*, TINUITI, https://tinuiti.com/blog/amazon/win-amazon-buy-box/ (last visited Aug. 9, 2020).

[89] Hamrick, *supra* note 87.

[90] Zeibak, *supra* note 88.

[91] Mitchell & Sussman, *supra* note 13.

reflect anticipated consumer choices, others do not. Moreover, reports suggest, for example, that Amazon punishes vendors for selling the same product elsewhere for a lower price.[92] Thereby, Amazon 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.[93] Amazon also gives priority to Prime sellers, who are more deeply woven into Amazon's ecosystem.[94]

An extensive investigation by the Wall Street Journal published in April 2020 debunks earlier statements of the company, including in front of Congress,[95] that it does not use seller specific data from third-party sellers' transactions to design and market its private-label products.[96] 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."[97] The imitation of a commercially successful trunk organizer gained prominence.[98] 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. […] It's a candy shop—everyone can have access to anything they want."[99] Moreover, Jeff Bezos acknowledged that the combination of data from two merchants suffices to comply with the policy to only use aggregated data sets.[100] The grotesque result of the abusive behavior: once Amazon has used transaction data to imitate the third-party merchants' products, the vendors are forced to invest in marketing and preferential search placements on the platform—in the case of trunk organizer, $60,000 per month.[101] 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."[102]

Other examples of Amazon's abuse of gatekeeper power relate to the internal processes and the commercial relationship between the platform and the third-party sellers. Many third-party sellers report restrictions of their business or even delisting, without notice, proper cause, or

[92] Guadalupe Gonzalez, *Phantom Buy Buttons, Performance Dings: The Scariest Things That Amazon Sellers Say Keep Them Up at Night*, INC.COM, https://www.inc.com/guadalupe-gonzalez/what-keeps-amazon-sellers-up-at-night-third-quarter-results.html (last visited Aug. 9, 2020); Zeibak, *supra* note 88.

[93] *See*, Baker & Scott Morton, *supra* note 32.

[94] Hamrick, *supra* note 87.

[95] *Online Platforms and Market Power, Part 2: Innovation and Entrepreneurship: Hearing Before the Subcomm. on Antitrust, Commercial, and Administrative Law of the H. Comm. on the Judiciary* (2019) (statement of Nate Sutton, associate general counsel, Amazon, Inc.).

[96] Mattioli, *supra* note 13.

[97] *Id.*

[98] *Id.* See, Makena Kelly, *Democrats Want to Know If Amazon 'Lied' about Using Platform Data to Create Products*, THE VERGE, https://www.theverge.com/2020/4/24/21234522/democrats-david-cicilline-jerry-nadler-amazon-bezos (last visited Aug. 8, 2020); Jason Del Rey, *Did Amazon Lie to Congress? Top Antitrust Lawmakers Want to Know.*, VOX, https://www.vox.com/recode/2020/4/23/21233335/amazon-seller-data-private-label-congress-antitrust-perjury-david-cicilline (last visited Aug. 8, 2020).

[99] *Online Platforms and Market Power, Part 6: Examining the Dominance of Amazon, Apple, Facebook, and Google: Hearing Before the Subcomm. on Antitrust, Commercial, and Administrative Law of the H. Comm. on the Judiciary* (2020) (statement of Pramila Jayapal, Member, H. Comm. on the Judiciary).

[100] *Id.* (statement of Jeff Bezos, CEO of Amazon, Inc.).

[101] Mattioli, *supra* note 13.

[102] Jungle Scout, *supra* note 65, at 24.

adequate procedure.[103] 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.[104] Freed from competitive pressures, Amazon can hang the sword of Damocles over the Amazon's partners' heads and demand absolute obedience.

European antitrust authorities have led the charge of reining in Amazon's gatekeeper power.[105] Abusive terms and conditions formed the basis of an investigation conducted by the German antitrust watchdog, the Federal Cartel Office, which recently ended with far reaching concessions by Amazon.[106] Italy, Austria, and Luxembourg pursued similar charges into discriminatory behavior.[107] In 2019, the European Commission launched a formal investigation into both, Amazon's general terms and the access conditions to the Buy Box.[108] 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.[109] In the U.S., both the Department of Justice and the FTC have launched broad investigations into Amazon and other digital platforms, focusing mainly on the platforms' past acquisitions.

2. OS Specific App Stores: Apple and Google

Globally, users downloaded 204 billion mobile apps in 2019.[110] 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.[111] The Google Play Store accounts for 36% of consumer spending, while the iOS App Store brings in 65%.[112] The vast majority of

[103] Van Loo, *Federal Rules of Platform Procedure*, *supra* note 11, at 6–9.

[104] Jungle Scout, *supra* note 65, at 24.

[105] Adam Satariano, *'This Is a New Phase': Europe Shifts Tactics to Limit Tech's Power*, N.Y. TIMES (Jul. 30, 2020), https://www.nytimes.com/2020/07/30/technology/europe-new-phase-tech-amazon-apple-facebook-google.html.

[106] Bundeskartellamt, Case Summary—Amazon, Nos. B2-88/18 (Jul. 19, 2019).

[107] Bell Robert, *EU Commission Scrutinizes On-Line Platforms With Competition Investigation into Amazon | Lexology*, LEXOLOGY (Oct. 11, 2019), https://www.lexology.com/library/detail.aspx?g=869b7acc-3121-442f-9147-061d02e6db4d.

[108] EU Commission, *Antitrust: Commission Opens Investigation into Possible Anti-Competitive Conduct of Amazon* (Jul. 2019).

[109] Art. 23, sec. 2, cl. 3, 1/2003/EC, Council Regulation on the implementation of the rules on competition laid down in Articles 81 and 82 of the Treaty, 2003 O.J. (L1) 16-17.

[110] App Annie & VentureBeat, Number of mobile app downloads worldwide from 2016 to 2019 (in billions) Statista, https://www.statista.com/statistics/271644/worldwide-free-and-paid-mobile-app-store-downloads/ (last visited August 09, 2020).

[111] Sensor Tower & TechCrunch, Mobile app downloads worldwide from 2018 to 2024, by store (in billions) Statista, https://www.statista.com/statistics/1010716/apple-app-store-google-play-app-downloads-forecast/ (last visited Aug. 09, 2020).

[112] App Annie, & TechCrunch. (June 11, 2019). Global mobile app sales revenue distribution between the Apple App Store and Google Play from 2012 to 2018 [Graph]. In Statista. Retrieved August 09, 2020, from https://www.statista.com/statistics/259510/revenue-distribution-between-the-apple-app-store-and-google-play/.

Android and iOS apps are offered free of monetary charges, 96% and 92% respectively.[113] 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 over the removal of the game Fortnite in a law suit filed in August of 2020.[114] 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 lose "half the market." 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.[115] 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.[116] 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, Apple recently announced that it will no longer prevent users from setting other defaults.[117] Yet, the power of default settings remains immense, either way. This insight gave rise to the EU 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.[118]

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,

[113] 42matters, Distribution of free and paid apps in the Apple App Store and Google Play as of June 2020 Statista, https://www.statista.com/statistics/263797/number-of-applications-for-mobile-phones/ (last visited August 09, 2020).

[114] Compl. at 48–49, Epic Games, Inc. v Apple, Inc., 13. Aug. 2020 (District Court).

[115] EU Commission, *Google Android*, No. C(2018) 4761 final, 136–37 (Jul. 2018).

[116] Verto Analytics, Leading mobile app publishers in the United States as of September 2019, based on audience size (in millions) Statista, https://www.statista.com/statistics/579102/leading-mobile-app-publishers-user-us/ (last visited August 10, 2020).

[117] Mark Gurman, *Apple Weighs Letting Users Switch Default IPhone Apps to Rivals*, BLOOMBERG.COM (Feb. 20, 2020), https://www.bloomberg.com/news/articles/2020-02-20/apple-weighs-loosening-restrictions-on-rival-iphone-music-apps; Tom Warren, *IOS 14 is a Chance for Apple to Lower Its Walls*, THE VERGE, https://www.theverge.com/2020/2/21/21146804/apple-ios-14-features-default-apps-settings-restrictions-apis-rumors (last visited Aug. 10, 2020).

[118] Commission Decision—Microsoft (tying), (COMP/C-3/39.530), at 9–13 (2009); EU Commission, *Antitrust: Commission Confirms Sending a Statement of Objections to Microsoft on the Tying of Internet Explorer to Windows*, No. MEMO/09/15 (Jan. 2009).

for example, found themselves shut out of iOS.[119] The reason for the denial of access likely lies in Apple's strict control and monitoring requirements.[120] Curiously, Apple's own gaming app Apple Arcade also relies on streaming.[121]

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."[122] In fact, "[s]ome searches produced as many as 14 Apple apps before showing results from rivals."[123] The company responded that the popularity, "user behavior data," Apple's more generic names for its apps lead to the higher ranking.[124] The music streaming app Spotify's ranking for the search term "music" strictly 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 EU Commission in early 2019, Spotify climbed back to rank 4.[125]

Rankings matter a lot. For audiobooks.com the sudden downgrading meant an immediate loss of 25 % of daily downloads.[126] Over time, the percentage for Apple's apps to appear as top search results has steadily increased—with a slight correction in 2019.[127] 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.[128] Apple' practices also force third-party applications to either take that hit or buy the advertising slot above the first ranked search result,[129] as a form of rent extraction.

In addition to foreclosing markets, Apple and Google also extract monopoly rents. Apple charges 30% on certain in-app purchases. For in-app subscriptions the fee starts at 30 % and drops to 15 % after one year.[130] Apple exempts so-called "reader apps" from the fee, which include

[119] Nick Statt, *Apple Confirms Cloud Gaming Services like XCloud and Stadia Violate App Store Guidelines*, THE VERGE, https://www.theverge.com/2020/8/6/21357771/apple-cloud-gaming-microsoft-xcloud-google-stadia-ios-app-store-guidelines-violations (last visited Aug. 10, 2020).

[120] *Id.*

[121] Gurman, *supra* note 117.

[122] Jack Nicas & Keith Collins, *How Apple's Apps Topped Rivals in the App Store It Controls*, N.Y. TIMES (Sep. 9, 2019), https://www.nytimes.com/interactive/2019/09/09/technology/apple-app-store-competition.html.

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

[124] Tripp Mickle, *Apple Dominates App Store Search Results, Thwarting Competitors*, WALL ST. J. (Jul. 23, 2019), https://www.wsj.com/articles/apple-dominates-app-store-search-results-thwarting-competitors-11563897221; Nicas & Collins, *supra* note 122.

[125] Nicas & Collins, *supra* note 122. See, Compl. at 21, Blix, Inc. v. Apple, Inc., No. 1:19CV01869.

[126] Mickle, *supra* note 124.

[127] Nicas & Collins, *supra* note 122.

[128] Mickle, *supra* note 124.

[129] *Id.*

[130] Borck et al., *supra* note 23, at 4.

newspapers and some streaming services.[131] Google's fee structure is essentially identical.[132] 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"[133] 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.[134] As a result, both app stores delisted the app.[135] In response to the delisting, Epic Games filed a law suit against Apple and Google, among others, based on the claim that the app stores are essential infrastructure for the company.[136] Overall, app developers lack alternatives to the two app stores provided 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.[137] And despite the company's growth and diversification, Google search has remained the core of the business with its enormous advertisement revenues.[138] 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."[139] Today, Google still links to third party content, however, as it also provides own content, it competes with many of the third-party content providers, including so-called "vertical search engines,"[140] like Yelp for restaurant reviews, or Kayak for flight comparisons.

Google dominates the market for desktop search with 80 % of the traffic in the U.S. as of May 2020.[141] The shift to mobile has not hurt Google. To the contrary, across all platforms,

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[131] Apple, Inc., *App Store Review Guidelines - Apple Developer* § 3.1.3(a), https://developer.apple.com/app-store/review/guidelines/ (last visited Aug. 10, 2020); William Gallagher & Mike Wuerthele, *App Store Policy and Developer Fee Drama Won't Change Apple's Ways at All*, APPLEINSIDER, https://appleinsider.com/articles/20/06/20/app-store-policy-and-developer-fee-drama-wont-change-apples-ways-at-all (last visited Aug. 10, 2020); Chaim Gartenberg, *Hey Opens Its Email Service to Everyone as Apple Approves Its App for Good*, THE VERGE, https://www.theverge.com/2020/6/25/21302931/hey-email-service-public-launch-apple-approves-app-fight-policy-price (last visited Aug. 10, 2020).

[132] Google Support, *supra* note 23.

[133] Apple, Inc., *supra* note 131, § 3.1.3(b); EU Commission, *Antitrust: Commission Opens Investigations into Apple*, EUROPEAN COMMISSION - EUROPEAN COMMISSION, https://ec.europa.eu/commission/presscorner/detail/en/ip_20_1073 (last visited Aug. 10, 2020).

[134] Webster, *supra* note 14.

[135] Bohn, *supra* note 14.

[136] Compl. at 48–49, Epic Games, Inc. v Apple, Inc., 13. Aug. 2020 (District Court); Compl., Epic, Inc. v. Google, 13. Aug. 2020 (District Court).

[137] FTC, Statement Regarding Google's Search Practices, Nos. 111–0163, at 1.

[138] Alphabet, Distribution of Google's revenues from 2001 to 2018, by source Statista, https://www.statista.com/statistics/266471/distribution-of-googles-revenues-by-source/ (last visited August 11, 2020)

[139] Jeffries & Yin, *supra* note 12.

[140] FTC, Statement Regarding Google's Search Practices, *supra*, at 1–2.

[141] StatCounter, Share of desktop search traffic originating from Google in selected countries as of May 2020 Statista, https://www.statista.com/statistics/220534/googles-share-of-search-market-in-selected-countries/ (last visited August 11, 2020)

including mobile and tablet, the Google's share hovers even higher, at 88 %.[142] 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 EU Commission prohibited in 2018 and for which it fined Google EUR 4.3 B.[143] 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 listing, they remain 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.[144] 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.[145]

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.[146] This strategy maximizes the attention users devote to Google's services and, 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.[147] 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.[148] 12 % of users' clicks lead them to other Google sites.[149] 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."[150] For consumers, this means that Google provides a lower quality search engine. 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 area that can users 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

[142] *Search Engine Market Share United States Of America*, STATCOUNTER GLOBAL STATS, https://gs.statcounter.com/search-engine-market-share/all/united-states-of-america (last visited Aug. 10, 2020).

[143] EU Commission, *supra* note 115.

[144] Jeffries & Yin, *supra* note 12.

[145] Scott Morton & Dinielli, *supra* note 12, at 24–36.

[146] Sam Schechner et al., *Searching for Video? Google Pushes YouTube Over Rivals*, WALL ST. J. (Jul. 14, 2020), https://www.wsj.com/articles/google-steers-users-to-youtube-over-rivals-11594745232.

[147] *Alphabet, Inc. Annual Report (Form 10-K)* 29 (Feb. 2020); Jeffries & Yin, *supra* note 12.

[148] Rand Fishkin, *How Much of Google's Search Traffic is Left for Anyone But Themselves?*, SPARKTORO (Jun. 18, 2019), https://sparktoro.com/blog/how-much-of-googles-search-traffic-is-left-for-anyone-but-themselves/.

[149] *Id.*

[150] *Alphabet, Inc*, *supra* note 147, at 5; Jeffries & Yin, *supra* note 12.

result.[151] Most strikingly, "[i]n one in five searches, non-Google content was entirely absent from the first screen."[152] All this hurts Google's competitors in the secondary market badly.[153] Travel agencies and comparison platforms were hit especially hard, as Google integrated the same services into its native services, like Google maps, which then experience preferential treatment by the search engine.[154]

In 2017, the EU Commission identified Google's self-preferencing related to Google shopping as anticompetitive.[155] The Commission concluded that Google's channeling of traffic away from third-party comparisons and to its shopping service "outside the scope of competition on the merits."[156] Notably, the EU Commission emphasizes that Google's conduct forecloses vertical search markets and, thus, "reduces the incentives of competing comparison shopping services to innovate" as well as for Google itself.[157] For consumers, the Commission reasons, Google's practice restricts access to the most relevant comparison sites.[158] The decision also rejects all of Google's efficiency claims as unfounded.[159]

4. Social Media: Facebook

With 3.1 billion monthly[160] and 2.5 billion daily product users as of 2020,[161] Facebook is the largest social media platform globally. In the U.S., Facebook attracts an audience of 190 million people,[162] 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.[163] For 2019, Facebook reported a total revenue of $ 71 billion,

[151] Jeffries & Yin, *supra* note 12.

[152] Leon Yin & Adrianne Jeffries, *How We Analyzed Google's Search Results – The Markup*, https://themarkup.org/google-the-giant/2020/07/28/how-we-analyzed-google-search-results-web-assay-parsing-tool (last visited Aug. 11, 2020).

[153] Jeffries & Yin, *supra* note 12; Dennis Schaal, *Google's Travel Gains Levy Pain at TripAdvisor and Expedia*, SKIFT, https://skift.com/2019/11/07/googles-travel-gains-levy-pain-at-tripadvisor-and-expedia/ (last visited Aug. 11, 2020).

[154] Jeffries & Yin, *supra* note 12; Schaal, *supra* note 153.

[155] EU Commission, *Google Seach (Shopping)*, No. AT.39740, 76–77 (Jun. 2017). The FTC closed a similar investigation in 2013, concluding that Google's alleged bias reflects competition on the merits, FTC, Statement Regarding Google's Search Practices, Nos. 111–0163, at 2–3. Today, DOJ strongly considers bringing a new case against Google.

[156] EU Commission, *supra* note 155, at 76.

[157] *Id.* at 180–81.

[158] *Id.* at 181.

[159] *Id.* at 197–99.

[160] Facebook, Cumulative number of monthly Facebook product users as of 2nd quarter 2020 (in billions) Statista, https://www.statista.com/statistics/947869/facebook-product-mau/ (last visited August 19, 2020).

[161] Facebook, Cumulative number of daily Facebook product users as of 2nd quarter 2020 (in billions) Statista, https://www.statista.com/statistics/1092227/facebook-product-dau/ (last visited August 19, 2020)

[162] We Are Social & DataReportal & Hootsuite, Leading countries based on Facebook audience size as of July 2020 (in millions) Statista, https://www.statista.com/statistics/268136/top-15-countries-based-on-number-of-facebook-users/ (last visited August 19, 2020)

[163] *Facebook, Inc. Annual Report (Form 10-K)* 7 (Jan. 2020).

almost entirely from advertising.[164] Facebook reached its current size and reach through a combination of organic growth and acquisitions, most famously, WhatsApp and Instagram.[165]

In the most comprehensive report on online platforms and digital advertising to date, the UK's Competition & Market Authority (CMA) suggests that Facebook's market share should be measured as a percentage of the time, or attention, users spend on social media.[166] 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.[167] While both mark a minor decline in Facebook's share compared to 2015,[168] 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.[169]

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."[170] 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.[171] 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."[172] Yet, ample evidence suggests that Facebook also suppresses applications where it sees a potential that they could threaten its business model.[173] This holds both for nascent competitors which 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."[174] This is exactly what the video sharing app Vine had already experienced in 2013—as did the messaging app MessageMe.[175] 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.[176] The law suit details how Facebook cut back the competitors' access to its platform where it saw competitive threats: to stifle the

[164] *Id.* at 42, 47, 54.
[165] Hemphill & Wu, *supra* note 18, at 7; Khan, *supra* note 11, at 1001.
[166] Competition & Markets Authority, *supra* note 12, at 120–22.
[167] *Id.* at 121.
[168] *Id.* at 121–22.
[169] Khan, *supra* note 11, at 1001; Fiona Scott Morton & David C Dinielli, *Roadmap for an Antitrust Case Against Facebook* 11–12 (Jun. 2020).
[170] Khan, *supra* note 11, at 1001.
[171] *Id.* See, III.F.2.
[172] Compl. at 26, Reveal Chat Holdco v. Facebook, 16 Jan. 2020 (district.court 2020).
[173] Khan, *supra* note 11, at 1001–3; Scott Morton & Dinielli, *supra* note 169, at 20–29.
[174] Competition & Markets Authority, *supra* note 12, at 312.
[175] Khan, *supra* note 11, at 1001–2; Scott Morton & Dinielli, *supra* note 169, at 24.
[176] Compl. at 30–50, *Reveal Chat Holdco v. Facebook*, 16 Jan. 2020.

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.[177]

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.[178] 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."[179] While copycat products are not guaranteed success stories, with access to Facebook's network, the copycats have significant competitive advantages and require little investment.[180] 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.[181]

Now, take Facebook's relationship with publishers—while in different product markets, publishers still compete with Facebook for user attention and advertisement revenue.[182] 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.[183] 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.[184] In Dina Srinivasan's words: "Facebook increasingly knew as much about The Wall Street Journal's readers as the Journal did itself."[185]

On top of the exclusionary conduct, Facebook also extracts monopoly rents.[186] Based on the understanding that users pay for social media services with their attention, Andrea Prat and

[177] *Id.* at 31–33.

[178] Competition & Markets Authority, *supra* note 12, at 312.

[179] Betsy Morris & Seetharaman, Deepa, *The New Copycats: How Facebook Squashes Competition From Startups*, WALL ST. J. (Aug. 9, 2017), https://www.wsj.com/articles/the-new-copycats-how-facebook-squashes-competition-from-startups-1502293444; Khan, *supra* note 11, at 1001–2; Adi Robertson, *Emails Show Mark Zuckerberg Feared App Startups Were Building Faster than Facebook in 2012*, THE VERGE, https://www.theverge.com/2020/7/30/21348082/zuckerberg-facebook-house-committee-emails-app-development-speed-copying-innovation (last visited Aug. 19, 2020); Deepa Seetharaman, *A Rival's Shadow Looms Over Snapchat IPO*, WALL ST. J. (Feb. 6, 2017), https://www.wsj.com/articles/a-rivals-shadow-looms-over-snapchat-ipo-1486296005.

[180] Shirin Ghaffary, *TikTok Clone Instagram Reels is Just One of the Many Times Facebook Has Copied Its Competitors*, VOX, https://www.vox.com/recode/2020/8/5/21354975/tiktok-clone-instagram-reels-facebook-copycat (last visited Aug. 19, 2020).

[181] Compl. at 33–35, *Reveal Chat Holdco v. Facebook*, 16 Jan. 2020.

[182] Khan, *supra* note 11, at 1003.

[183] *Id.*

[184] Srinivasan, *supra* note 32, at 70–73.

[185] *Id.* at 72.

[186] *Id.* at 97–98.

Tommaso Valetti, describe the concept of attention bottlenecks.[187] 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 consumer choice and innovation.[188] 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 allow Facebook to offer less privacy-sensitive applications as it hypothetically could in a competitive environment.[189] This 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."[190] 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 excerpt 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 break-ups.[191] Third, the prevalence of enormous network effects suggests that markets would quickly and organically re-consolidate, after competition were re-established through traditional horizontal break-ups.[192] 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,[193] 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

[187] Andrea Prat & Tommaso M. Valletti, *Attention Oligopoly* 3 (May 2019).
[188] *Id.*
[189] Scott Morton & Dinielli, *supra* note 169, at 25–29.
[190] Rochet & Tirole, *supra* note 30, at 1013, 1017–20. See, Marshall Van Alstyne & Geoffrey Parker, *Platform Business: From Resources to Relationships*, 9 MARKETING INTELLIGENCE REVIEW 24, 25–26 (May 2017).
[191] *See*, part IV.A.
[192] *See*, part IV.A.
[193] For a distinction of networks and platforms, *see* Cohen, *supra* note 10, at 143–45.

has access,"[194] or, more generally, the relationships it enables.[195] 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."[196] In other words, Networks are anti-rival, just like knowledge, ideas, and software.[197] 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 network creates.[198] This is where proprietary platforms come in: they aggregate network externalities.[199] Platforms then partially monetize the user-created externalities and partially utilize them as market entry barriers against competitors. In other words, so-called network externalities cause network effects which create significant barriers to entry in markets for digital platforms.[200] 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 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.[201] 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.[202] Instead, Google asked its employees to refer to "valuable to users" and "challenges," respectively.[203] The company's advice on "Communicating Safely"[204] 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.[205] In these emails, Facebook's CEO, Mark Zuckerberg volunteered the rationale for acquiring Instagram in 2012: his

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[194] Roland Artle & Christian Averous, *The Telephone System as a Public Good: Static and Dynamic Aspects*, 4 THE BELL JOURNAL OF ECONOMICS AND MANAGEMENT SCIENCE 89, 90, 97–98 (1973).

[195] Alstyne & Parker, *supra* note 190, at 25–26.

[196] Jeffrey Rohlfs, *A Theory of Interdependent Demand for a Communications Service*, 5 THE BELL JOURNAL OF ECONOMICS AND MANAGEMENT SCIENCE 16, 16 ([Wiley, RAND Corporation] 1974).

[197] Lawrence Lessig, *Open Code and Open Societies: Values of Internet Governance*, 74 CHI.-KENT L. REV. 1405 (1999). ("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.")

[198] Ackerberg & Gowrisankaran, *supra* note 30, at 738.

[199] Marshall W. Van Alstyne et al., *Pipelines, Platforms, and the New Rules of Strategy*, HARVARD BUSINESS REVIEW 54, 57–58 (Apr. 2016).

[200] *See*, Mark A. Lemley & David McGowan, *Legal Implications of Network Economic Effects*, 86 CALIF. L. REV. 479, 503–4 (1998).

[201] Armstrong, *supra* note 16, at 668–70.

[202] Adrianne Jeffries, *To Head Off Regulators, Google Makes Certain Words Taboo – The Markup*, THE MARKUP, https://themarkup.org/google-the-giant/2020/08/07/google-documents-show-taboo-words-antitrust.

[203] *Id.*

[204] *Id.*

[205] *Online Platforms and Market Power, Part 6: Examining the Dominance of Amazon, Apple, Facebook, and Google: Hearing Before the Subcomm. on Antitrust, Commercial, and Administrative Law of the H. Comm. on the Judiciary* (2020).

fear of a nascent competitor and awareness of the power of network effects.[206] The main purpose of Google internal communication policies, of course, is to reduce the risk of creating compromising evidence of anticompetitive behavior and intent among its managers. 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.[207] 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:[208] "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."[209] 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.[210]

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 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."[211] 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."[212] Evidently, network effects have upper boundaries, namely congestion, and can, in special circumstances, also be negative for other reasons via creating undesirable connections.[213] 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

[206] *Id.*; Casey Newton, *"Instagram Can Hurt Us": Mark Zuckerberg Emails Outline Plan to Neutralize Competitors*, THE VERGE (Jul. 29, 2020), https://www.theverge.com/2020/7/29/21345723/facebook-instagram-documents-emails-mark-zuckerberg-kevin-systrom-hearing. (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.")

[207] SHAPIRO & VARIAN, *supra* note 17.

[208] *Id.* at 184.

[209] *Id.*

[210] Ackerberg & Gowrisankaran, *supra* note 30, at 738, 760.

[211] SHAPIRO & VARIAN, *supra* note 17, at 184.

[212] Beckstrom Rod, *Beckstrom's Law: A New Fundamental Model for Valuing Any Network*, http://www.beckstrom.com/images/law.pdf.

[213] S. J. Liebowitz & Stephen E. Margolis, *Network Externality: An Uncommon Tragedy*, 8 THE JOURNAL OF ECONOMIC PERSPECTIVES 133, 134 (American Economic Association 1994).

or (digital) platform.[214] 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. [215] 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; the latter is practically unfeasible and legally constrained. A more gradual approach only seems possible where customers specifically value individual vendors on the platform;[216] 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 incumbent network effects, or valuable enough to convince users to multi-home. Creating a product with thee effects is an incredibly high bar.

The intensity of indirect network effects varies for different platforms, of course.[217] Empirical work suggests that indirect network effects are substantial where they occur and specifically determinant in the digital economy.[218] 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.[219] 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 Apples network effects precisely. Rysman's work on Yellow Pages is instructive as it considers advertisement markets.[220] 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 larger 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

[214] Taylor Buley, *How To Value Your Networks*, FORBES (Jul. 31, 2009), https://www.forbes.com/2009/07/31/facebook-bill-gates-technology-security-defcon.html.

[215] Rohlfs, *supra* note 196, at 19; Witt, *supra* note 30.

[216] Rohlfs, *supra* note 196, at 19, 30–31.

[217] Gandal et al., *supra* note 30, at 44; Lemley & McGowan, *supra* note 200, at 592–93.

[218] Gandal et al., *supra* note 30, at 58; Hiroshi Ohashi, *The Role of Network Effects in the US VCR Market, 1978-1986*, 12 JOURNAL OF ECONOMICS & MANAGEMENT STRATEGY 447, 474–76 (2003).

[219] Nair et al., *supra* note 30, at 23, 47.

[220] Marc Rysman, *Competition between Networks: A Study of the Market for Yellow Pages*, 71 THE REVIEW OF ECONOMIC STUDIES 483 (2004).

externalities;" (2) the presence of "[f]ixed fees or per-transaction charges;" and (3) "[s]ingle-homing or multi-homing."[221] 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, e-commerce platforms need to attract settlers and app store developers and, thus, offer appealing conditions to both groups. Their group externalities for buyers are larger than developers. 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.[222] Generally, end-consumers tend to single home, while the vendors more likely multi-home.[223]

All this changes with the tipping of the market.[224] 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 steps. Network effects now serve as the basis for rent extraction and barriers for 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 costumers. In an earlier stage of the market, this would not have been possible.

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" in the hands of the users of the network or platform. This architecture is usually referred to as the end-to-end principle;[225] its best example is the early open internet. At the other extreme, networks or platforms can internalize the brainpower (almost) entirely. Endpoints then become mainly consumers of centrally planned innovation, like broadcasting television or the old telephone network with standardized devices. 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 content creators. They have deliberately chosen to open their platforms to attract innovation and leave room for experimentation. This strategy also requires less starting capital, which is a crucial advantage, especially in the early stages of growth.

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[221] Armstrong, *supra* note 16, at 669–70.

[222] *Id.* at 678.

[223] *Id.*

[224] *Id.* at 668–69.

[225] J. H. Saltzer et al., *End-to-End Arguments in System Design*, 2 ACM TRANS. COMPUT. SYST. 277, 278 (Nov. 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.").

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."[226] 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.[227] 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.[228] 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 has 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—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 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.[229] 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

[226] Dubé et al., *supra* note 30, at 2017.
[227] *Id.* at 240.
[228] *See*, Lemley & McGowan, *supra* note 200, at 522.
[229] See, Abrahamson, *supra* note 5.

such, infinitely scalable. Thanks to big data analytics and modern algorithms, data's aggregate value far exceeds the value of their subsets. Large data bases offer comprehensive insights into user preferences and behavioral patterns. Taken together, these insights allow digital platforms to predict and steer 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 user' switching costs. Amazon offers Prime.[230] The Google Play Store and Apple App Store locked their users even tighter into their platforms. After investing up to $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, 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 in the phase 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.[231] 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 and

[230] Khan, *supra* note 32, at 750–53.
[231] United States v. Terminal Railroad Ass'n of St. Louis, 224 U.S. 383 (1912).

brought the essential facilities doctrine to an effective halt in *Trinko*[232]—before it could reach Silicon Valley's digital infrastructure. The Court unanimously[233] 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.[234] After discussing some of the case law generally associated with the essential facilities doctrine,[235] 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."[236]

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 has remained an exception to general antitrust principles.[237] 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,[238] 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 economy far beyond the city. Not least due to St. Louis' geography, constructing additional, alternative crossings would have required prohibitively large investments. As 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."[239] These terms included "the imposition of the arbitrary hauling charge imposed upon the artificially

[232] Waller, *supra* note 32, 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.")

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

[234] *Id.* at 404.

[235] *Id.* at 408–10.

[236] *Id.* at 410–11. (Citations omitted).

[237] *See*, Eastern States Retail Lumber Dealers' Ass'n v. United States - McBride v. United States, 234 U.S. 600, 614 (1914); United States v. Colgate & Co., 250 U.S. 300, 307 (1919).

[238] *See, Eastern States Retail Lumber Dealers' Ass'n v. United States - McBride v. United States*, 234 U.S. at 614.

[239] United States v. Terminal Railroad Ass'n of St. Louis, 224 U.S. 383, 410 (1912).

limited trade districts described.[240] 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.[241] 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."[242]

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."[243] 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 disjoinder."[244] 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 recede to the west."[245] 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."[246] 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.[247] 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.[248] Instead, it follows from the consolidation of the existing infrastructure, which created efficiencies that competing systems could not have afforded.[249] As it relates to public policy, Justice Lurton aims to avoid a waste of scarce land for additional terminals and parallel tracks as a precondition for competition on the infrastructural level.[250] After all, as it strongly relies on the combination of transit capacities, the Court's decision

[240] *Id.*

[241] *Id.* at 409.

[242] *Id.* at 411.

[243] *Id.* at 409; Standard Oil Co. v. U.S., 1910 221 U.S. 1, 78.

[244] *Terminal Railroad Ass'n*, 224 U.S. at 409, 412. ("[A break-up] may be necessary unless one equally adequate can be applied.")

[245] *Id.* at 396–97.

[246] *Id.* at 397.

[247] *Id.*

[248] *Id.*

[249] *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 non-proprietary 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.")

[250] *Id.* at 387–88, 395–96, 405. ("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.")

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, the Court applied the essential facilities doctrine in various situations. 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 section 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."[251] The Court dismissed AP's defense that the government failed to provide evidence of AP's "indispensability" to independent newspapers.[252] Instead, a competitive advantage for members versus a disadvantage for nonmembers, respectively, suffices as a basis for the government's claim for relief.[253] 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."[254] 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 impede the free flow of ideas does not afford non-governmental combinations a refuge if they impose restraints upon that constitutionally guaranteed freedom."[255]

Only 6 years later, the Supreme Court again found itself engaged with the media sector in *Lorain Journal*.[256] 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.[257] The Court saw a duty to deal of the "indispensable medium of advertising for many Lorain concerns" and forced the journal to accepts advertisements from advertisers that also ran commercials on the radio station.[258] In 1952, the First Circuit mandated in *Gamco* that the operator of a wholesale produce market re-admit a tenant to its facility that had been ousted.[259] 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.[260]

In 1977, the DC Circuit Court became the first to rely on the essential facilities doctrine by name in *Hecht*; the court equated it with the "bottleneck principle."[261] The court mandated the operators of a football stadium in DC grant a prospective rival team access to the stadium; as the

[251] Associated Press v. U.S., 326 U.S. 1, 4 (1945).
[252] *Id.* at 18.
[253] *Id.* at 17–18.
[254] *Id.* at 20.
[255] *Id.*
[256] Lorain Journal v. U.S., 342 U.S. 143 (1951).
[257] *Id.* at 148.
[258] *Id.* at 152.
[259] Gamco, Inc. v. Providence Fruit, Inc., 194 F.2d 484 (1st Cir. 1952).
[260] *Id.* at 487.
[261] Hecht v. Pro-Football, Inc., 570 F.2d 982, 992 (1977).

exclusive contract between the operator and a rival team violated sections 1 and 2 of the Sherman Act.[262] The court clarified that for a duty to deal to exist "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."[263] 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 a facility need not be indispensable."[264] by signing off on explicit jury instructions on essential facility claims, Judge Wilkey also implicitly defined the conditions for liability under the essential facilities doctrine.[265]

The fact-specific and somewhat indirect articulation of the essential facility-claim in *Hecht* was a 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."[266] The forth prong incorporates all concerns of legitimate business justifications for the denial of access.[267] 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."[268]

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 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."[269] 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.[270] Moreover, the Court did not

[262] *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).
[263] *Hecht v. Pro-Football, Inc.*, 570 F.2d at 992.
[264] *Id.* at 992–93.
[265] *Id.* at 993.
[266] MCI Communications Corp. v. American Tel. & Tel. Co., 708 F.2d 1081, 1132–33 (7th Cir. 1983).
[267] Illinois, ex rel. Burris v. Panhandle Eastern Pipeline Co., 935 F.2d 1469, 1483 (7th Cir. 1991).
[268] *MCI Communications*, 708 F.2d at 1132.
[269] Aspen Skiing Co. v. Aspen Highlands Skiing Corp., 472 U.S. 585, 601–5 (1985).
[270] *Id.* at 605–8.

recognize any justifiable business rationale, but, instead, found that the defendant was motivated solely by a desire to harm its smaller competitor.[271] *Aspen Skiing* was widely criticized in the literature. In fact, many—erroneously—understood Aspen Skiing 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.[272] Yet, in the larger context, the landmark decision marked a high point for the essential facilities doctrine. From thereon, the 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.[273] It would prove prohibitively expensive for competitors to create their own facilities, or, at least, would put them at a significant disadvantage.[274] In *Terminal Railroad Association*, the Court presented its remedy as less intrusive to the defendant and a function of external limitations to re-establishing competition. The emphasis on the monopolist's intent to monopolize varied over time: the reason to focus on the defendants' intent generally shifted from carrying the argument to merely providing evidence of the anti-competitive nature of the conduct in question.[275] 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*.[276] Moreover, moral justifications of participation and checks on private power seem 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,"[277] the tide started to shift against the essential facilities doctrine. In the shadow of the economic shift to the right heralded in by the Regan administration and continued throughout the 1990's, the intellectual seeds of the extreme anti-

[271] *Id.* at 608–10.

[272] 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); *Illinois, ex rel. Burris v. Panhandle Eastern Pipeline Co.*, 935 F.2d 1469.

[273] Gamco, Inc. v. Providence Fruit, Inc., 194 F.2d 484, 487 (1st Cir. 1952).

[274] *Id.*

[275] For intent as a constituting condition, *see Aspen Skiing*, 472 U.S. at 602–3, United States v. Terminal Railroad Ass'n of St. Louis, 224 U.S. 383, 395 (1912); United States v. Aluminum Co. of America, 148 F.2d 416, 432 (2nd Cir. 1945). For intent as evidence of anticipated effects, *see* United States v. Microsoft Corp., 253 F.3d 34, 59 (2nd Cir. 2001). In *Trinko*, the Court does not mention intent, see Verizon Communications Inc. v. Law Offices of Curtis V. Trinko, LLP, 540 U.S. 398 (2004).

[276] *Aspen Skiing*, 472 U.S. at 604–8; *Trinko*, 540 U.S. at 409.

[277] Britton-Purdy et al., *supra* note 29, at 1784.

enforcement Chicago School of antitrust[278] 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 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, "[Philipp E.] Areeda succeeded in making the essential facilities doctrine a dirty word in antitrust."[279] The courts eagerly picked up the bait.[280] Tim Wu rightly identifies "an unfortunate trend in the antitrust law, one best described as the tendency to elevate theory over evidence."[281] He describes the irony that the movement started as an endeavor to bring more economic rigor into the courtroom, now, ironically turns on mounting evidence of monopolization and abuses of power.[282] This doctrinal approach to unilateral conduct finds itself detached from reality and modern economic theory.[283]

The rollback of the essential facilities doctrine commenced with a stricter delineation of its boundaries. In *Illinois v. Panhandle Eastern Pipeline*, the Seventh Circuit took a very narrow view of a competitor's inability to duplicate essential facility. 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."[284] 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.[285] 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 a stand-alone utility company to grant a municipality access to its power grid so that distribute electricity[286]—an outlier in the Supreme Court's jurisprudence and cautioned against applying the essential facilities doctrine to single firm contexts without qualifications.[287] 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

[278] 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*, U. PA. L. REV. (forthcoming).

[279] Waller, *supra* note 32, at 366.

[280] *Trinko*, 540 U.S. at 410–11; Twin Laboratories, Inc. v. Weider Health & Fitness, 900 F.2d 566, 569 (Court of Appeals 1990).

[281] Tim Wu, *Ohio v American Express - The American Express Opinion, the Rule of Reason, and Tech Platforms*, 7 JOURNAL OF ANTITRUST ENFORCEMENT 104, 117 (2019).

[282] *Id.* at 117–18. See, Hovenkamp & Scott Morton, *supra* note 278.

[283] Hovenkamp & Scott Morton, *supra* note 278.

[284] Illinois, ex rel. Burris v. Panhandle Eastern Pipeline Co., 935 F.2d 1469, 1482–83 (7th Cir. 1991).

[285] *Id.* at 1483–85.

[286] Otter Tail Power Co. v. United States, 410 U.S. 366 (1973).

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

essential facility to "eliminate the potential for competition," before the doctrine creates access rights.[288] This meant a further restriction form the earlier requirement of a "severe handicap" on competitors,[289] which itself is stricter than the "adverse impact" on the ability of the petitioner to compete set forth by the Supreme Court in *Aspen*.[290]

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*.[291] Instead of overruling precedent, the Court in *Trinko*, performed the deepest of a thousand cuts.[292] Curiously, the Court articulated the doctrine's scathing criticism in dicta.[293] The Court declared that "*Aspen Skiing* is at or near the outer boundary of § 2 [of the Sherman Act] liability."[294] 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."[295] Of the essential facilities doctrine, he writes that it had never been recognized by the Court.[296] This observation is true insofar as the doctrine had not been named in any of the Court's previous decisions. Though, *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*.

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.[297] Under *Otter Tail*, a defendant is not exempt from antitrust scrutiny only because its activities are subject to a regulatory agency's jurisdiction.[298] 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.[299] Put differently, *Otter Tail* remains on the books, but is confined to 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 Protection Act,

[288] *Id.* at 544–45.

[289] Twin Laboratories, Inc. v. Weider Health & Fitness, 900 F.2d 566, 568–69 (Court of Appeals 1990). The DC Circuit relied on the same standard before *Aspen*, see Hecht v. Pro-Football, Inc., 570 F.2d 982, 992 (1977).

[290] Aspen Skiing Co. v. Aspen Highlands Skiing Corp., 472 U.S. 585, 585 (1985).

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

[292] Frischmann & Waller, *supra* note 5, at 8–10. ("Death by a Thousand Cuts").

[293] *Id.* at 9.

[294] *Trinko*, 540 U.S. at 409.

[295] *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).

[296] *Trinko*, 540 U.S. at 411.

[297] *Otter Tail Power Co. v. United States*, 410 U.S. at 372–75.

[298] *Id.*

[299] *Trinko*, 540 U.S. at 411–12.

does not provide an equivalent to the type of access rights on which the *Trinko* carve-out rests in the telecommunications context.[300]

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,[301] and shapes the environment for potential future cases. Consider the Supreme Court's ruling in *American Express*[302]. 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 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.[303] 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 anti-steering provision[304] which "prohibits merchants from discouraging customers from using their Amex card."[305] As merchants cannot afford to forgo sales from American Express users, the anti-steering 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.[306] In its first comprehensive assessment of the issue,[307] 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 the 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) "then the burden shifts back to the plaintiff to demonstrate that the procompetitive efficiencies could be reasonably achieved through less anticompetitive means."[308] 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

[300] See, *Id.* at 411.
[301] *See*, part I.B.1.
[302] Ohio v. Am. Express Co., 2018 138 S. Ct. 2274.
[303] See, Rochet & Tirole, *supra* note 30, at 990–94.
[304] *Am. Express*, 2018 138 S. Ct. at 2284.
[305] *Id.* at 2279.
[306] *Id.* at 2287.
[307] Geoffrey A Manne, *Ohio v American Express - In Defence of the Supreme Court's 'Single Market' Definition in Ohio v American Express*, 7 JOURNAL OF ANTITRUST ENFORCEMENT 104, 104 (2019).
[308] *Am. Express*, 2018 138 S. Ct. at 2284.

provide a full proof up front, as Justice Breyer points out in the dissent.[309] 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.[310] When dismissing the price increases as insufficient evidence of consumer harm absent a factually measurable reduction in output, majority ignores the appropriate hypothetical alternative, functioning competition.[311]

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.[312] 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.[313] Though in *Amex*, the Supreme Court expressly singled out "two-sided transaction platforms"[314] and distinguished between markets on which "the impacts of indirect network effects and relative pricing in that market are minor."[315] For example, the court notes that markets with minor network effects include newspapers that rely on advertising revenue, suggesting that *Amex* might not apply to markets for 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*.[316] Building on Wu's notion of advertisement financed Big Tech as Attention Merchants,[317] John Newman provides a helpful alternative conceptualization: One might understand the entire market as a vertical distribution system for attention.[318] Thus, there is significant reason to believe that the Court's holding in *Amex* 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 *Amex*.[319] 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

[309] *Id.* at 2303–4.

[310] *Id.* at 2288.

[311] *Id.* at 2302.

[312] Wu, *supra* note 281, at 118–19.

[313] United States v. Sabre Corp., No. CV 19-1548-LPS, 2020 WL 1855433, at *33 (D. Delaware: District Court, Third Circuit Apr. 7, 2020).

[314] *Am. Express*, 2018 138 S. Ct. at 2286. ("But two-sided transaction platforms, like the credit-card market, are different. These platforms facilitate a single, simultaneous transaction between participants.")

[315] *Id.*

[316] Wu, *supra* note 281, at 123–26.

[317] TIM WU, THE ATTENTION MERCHANTS: THE EPIC SCRAMBLE TO GET INSIDE OUR HEADS (Vintage Books 2016).

[318] John M. Newman, *Antitrust in Attention Markets* 13–14 (2020) (on file with the author). In so far, Wu notes out that the Court in footnote 9 implicitly acknowledges the concept of markets for attention, see Wu, *supra* note 281, at 124.

[319] *Compare*, Wu, *supra* note 281, 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.

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 *Amex*. Some apps are offered for "sale" or as a subscription model and some 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,[320] 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:[321] 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.[322] 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.[323] 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 and the reasoning behind the decision might well prevail in future cases.[324]

As the *American Express* analysis lead to narrow market definitions in a merger setting, it may lend itself to the same result in the essential facilities doctrine context.[325] 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-retail 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

[320] James Vincent, *Spotify Files Antitrust Complaint over 'Apple Tax,'* THE VERGE (Mar. 13, 2019), https://www.theverge.com/2019/3/13/18263453/spotify-apple-app-store-antitrust-complaint-ec-30-percent-cut-unfair.

[321] Wu, *supra* note 281, at 126.

[322] United States v. Sabre Corp., No. CV 19-1548-LPS, 2020 WL 1855433, at *32-38 (D. Delaware: District Court, Third Circuit Apr. 7, 2020).

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

[324] United States v. Sabre, Nos. 1-19–cv–01548.

[325] *See*, Wu, *supra* note 281, at 126.

law.[326] 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.[327] 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.[328] 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.[329] 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.[330] In fact, access to infrastructure at a wholesale level also drove the *Terminal Railroad Association* decision, rather than concerns about concentration in the product markets for the goods transported on the trains.[331]

The idea of granting competitors access to essential facilities 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 exploitive 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 provide vital impulses. The doctrine's flexibility provides for a perfect remedy in dynamic market environments, whether these concern railroads or digital platforms. Its general applicability and technological neutrality allow it to react to emerging challenges in a functional matter and avoid regulatory gaps.

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[326] Lipsky & Sidak, *supra* note 32, at 1214.

[327] Associated Press v. U.S., 326 U.S. 1, 17–18 (1945).

[328] Borough of Lansdale v. Philadelphia Elec. Co., 692 F.2d 307, 312 (Third Circuit: Court of Appeals 1982). *See*, Lipsky & Sidak, *supra* note 32, at 1214.

[329] Gamco, Inc. v. Providence Fruit, Inc., 194 F.2d 484, 487 (1st Cir. 1952).

[330] Drinkwine v. Federated Publications, Inc., 780 F.2d 735, 740 (Ninth Circuit: Court of Appeals 1985). *See*, Lipsky & Sidak, *supra* note 32, at 1214.

[331] United States v. Terminal Railroad Ass'n of St. Louis, 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 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. 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 re-calibrated 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. 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; sometimes it present 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. Intellectual property law grants exclusive rights to promote the progress of science and useful arts.[332] We create, protect, and tolerate monopolies to reward innovation, as "property is only another name for monopoly."[333] 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.[334] 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.[335] All the more remarkable is the tendency of competition policy to ignore fundamental insights into the

[332] *See*, U.S. CONST. art. 1, § 8, cl. 8.

[333] Eric A. Posner & E. Glen Weyl, *Property Is Only Another Name for Monopoly*, 9 JOURNAL OF LEGAL ANALYSIS 51 (2017). *See*, Mark A. Lemley, *Economics of Improvement in Intellectual Property Law*, 75 TEX. L. REV. 989, 1066 (1996–1997).

[334] Lemley, *supra* note 333, at 1066.

[335] Gilbert & Shapiro, *supra* note 31, at 111.

optimal design of frameworks for innovation that have been established in the area of intellectual property law:[336] While monopolies in the form of exclusionary property rights can serve as incentives for creativity, innovation and, at least[337] in patent law, disclosure and dissemination of information,[338] 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. However, in contrast to all but universally accepted policies in IP law,[339] antitrust doctrine 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.[340] The first axis defines the scope, breadth, or material robustness of the monopoly.[341] What exactly falls under the exclusive right of the author or inventor? Which otherwise infringing behavior must the right 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."[342] Limiting the scope of the monopoly, copyright law includes notions of fair use and compulsory licensing, to further public policy and increase the allocative efficiency. Patent law contains provisions guaranteeing that essential patents are licensed according to fair, reasonable, and non-discriminatory terms (FRAND), for example.

The second dimension stands for the duration of the exclusive right.[343] 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"[344] 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."[345] And, if trade secrets were correctly understood as intellectual property rights, they would also be subject to an expiration date.[346]

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.[347] In effect, the property-rights based incentives for

[336] A notable exception in this regard is Weiser, *supra* note 31.

[337] Copyright law, for example, also sets minor incentives for disclosure by lowering the burden of proof and allowing for higher damages when materials are marked as copyrighted and thus, necessarily published.

[338] Jeanne C. Fromer, *Patent Disclosure*, 94 IOWA L. REV. 539, 544–62 (2008–2009).

[339] William M. Landes & Richard A. Posner, *Indefinitely Renewable Copyright*, 70 U. CHI. L. REV. 471, 471 (2003) (The authors indeed argue for infinitely renewable rights.).

[340] *See*, Gilbert & Shapiro, *supra* note 31, at 106.

[341] See, *Id.*

[342] *Id.*

[343] See, *Id.*

[344] 17 U.S.C. § 302(a).

[345] 35 U.S.C. § 154(a)(2).

[346] *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.").

[347] Lisa D. Cook, *Violence and Economic Activity: Evidence from African American Patents, 1870–1940*, 19 JOURNAL OF ECONOMIC GROWTH 221, 222 (2014).

innovation presents itself as a function of the scope, duration, and certainty of the potential monopoly.[348]

In the following discussion, I will focus on the optimal scope and the duration of IP rights,[349] 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."[350] 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."[351] Though, Nordhaus points out that the "determination of the optimal life is extremely difficult, but not necessarily very important."[352] Rather, policymakers should identify the point at which the patent system only provides diminishing marginal returns and, thus, should be complemented by other incentives for innovation.[353] 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.[354] The authors point at "more careful antitrust treatment of patent practices, such as provisions of licensing contracts" to limit the scope of the patents.[355] Chien-Fu Chou and Oz Shy partially confirm the notion of optimally infinite patents, but complicate the analysis.[356] In contrast to the 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."[357]

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

[348] See, David Encaoua et al., *Patent Systems for Encouraging Innovation: Lessons from Economic Analysis*, 35 RESEARCH POLICY 1423, 1432 (2006).

[349] *See*, Chou & Shy, *supra* note 31, at 811; Gilbert & Shapiro, *supra* note 31; NORDHAUS, *supra* note 31, at 76–86.

[350] Gilbert & Shapiro, *supra* note 31, at 106.. See, Encaoua et al., *supra* note 348, 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 31, at 811; NORDHAUS, *supra* note 31, at 76.

[351] NORDHAUS, *supra* note 31, at 79.

[352] *Id.* at 86.

[353] *Id.*

[354] Gilbert & Shapiro, *supra* note 31, at 107, 111.

[355] *Id.* at 111.

[356] Chou & Shy, *supra* note 31, at 818.

[357] *Id.*

patent.[358] In doing so, the authors combine notions of scope and duration.[359] 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."[360] 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.[361] This would allow for more granular methods of finding the optimal patent life span based on a process that incentivizes self-assessment and taxes 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.[362] 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.[363] 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 communal power of unrestrained access to a commonly accessible foundation of knowledges.

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

[358] Ted O'Donoghue et al., *Patent Breadth, Patent Life, and the Pace of Technological Progress*, 7 JOURNAL OF ECONOMICS & MANAGEMENT STRATEGY 1, 2 (1998).

[359] *Id.*

[360] *Id.* at 4.

[361] Encaoua et al., *supra* note 348, at 1438.

[362] *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 characterised by uniform rules, according to the 'one size fits all' principle.")

[363] Chou & Shy, *supra* note 31, at 811; NORDHAUS, *supra* note 31, at 79.

discount future earnings beyond purely mathematical uncertainty.[364] 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.[365] 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.[366] The patent system is plagued from 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.[367] Also, strategies to layer patents prolong their effective duration significantly.[368] 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."[369] 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 statue is significantly stricter than the current understanding of its U.S. role model. In fact, article

[364] Partha Dasgupta & Eric Maskin, *Uncertainty and Hyperbolic Discounting*, 95 THE AMERICAN ECONOMIC REVIEW 1290, 1290–91 (2005).

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

[366] Art. 7, Sec. 1, Berne Convention mandates a period of "the life of the author and fifty years after his death."

[367] Doug Lichtman & Mark A. Lemley, *Rethinking Patent Law's Presumption of Validity*, 60 STAN. L. REV. 45, 48 (2007–2008).

[368] Carl Shapiro & Mark A. Lemley, *The Role of Antitrust in Preventing Patent Holdup*, forthcoming U. PA. L. REV. (Aug. 2020).

[369] Art. 102, cl. 1 of the Treaty on the Functioning of the European Union (TFEU), Consolidated Version of the Treaty on the Functioning of the European Union, Mar. 30, 2010, 2010 O.J. (C 83) 47 [hereinafter TFEU].

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 U.S.: First, article 102 TFEU conceptually rests on a concept of a special responsibility for competition as a function of market power. Second, the EU statue 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."[370] 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*.[371] 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. 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."[372] This allows the EU Commission and courts to second guess prices and conditions 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.[373] The EU Commission will likely invoke the limitation on rent extraction in its current investigation of Amazon as well. 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.

[370] C-552/03, Unilever Bestfoods v. Commission, [2006] E.C.R. I-9091 [22]. *See*, C-52/09, Konkurrensverket v. TeliaSonera Sverige AB, [2011] E.C.R. I-527 [2, 3, 8, 24]; C-202/07, France Télécom SA v Commission, [2009] E.C.R. I-2369 [105].

[371] 94/119/EC, Commission Decision Port of Rødby, 1994 O.J. (L55) 52.

[372] Art. 102, cl. 2, lit. a TFEU.

[373] Bundeskartellamt, Case Summary—Amazon, Nos. B2-88/18, at 7–8 (Jul. 19, 2019).

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 an access right 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, in effect, limits monopolistic elements of digital platforms to reasonable levels of return on their investments. Antitrust enforcers should not hesitate to demand reasonable accommodations for capacity restraints.

One hundred years of case law provide a solid foundation for level one. In many ways, digital platforms resemble older forms of network infrastructure, namely the railroads.[374] 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 technologically neutral remedies. Listings on a platform, inclusion in an algorithm, or admittance to a special showcase are functional equivalents of the admission to railroad facilities,[375] a press associations,[376] or football stadiums.[377] In fact, platforms and networks provide the prime examples of the doctrine's application.[378] Where data and the control over data forms the bottleneck, competitors can be granted access to that data within the boundaries of the applicable privacy rules.[379] 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, compulsory licensing regimes in copyright and FRAND frameworks for essential patents. Level one 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, 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 antirust and moving towards a positive

[374] *See*, United States v. Terminal Railroad Ass'n of St. Louis, 224 U.S. 383 (1912).
[375] *See*, *Id.*
[376] *See*, Associated Press v. U.S., 326 U.S. 1 (1945).
[377] *See*, Hecht v. Pro-Football, Inc., 570 F.2d 982 (1977).
[378] *Terminal Railroad Ass'n*, 224 U.S. 383, *Associated Press v. U.S.*, 326 U.S. 1; MCI Communications Corp. v. American Tel. & Tel. Co., 708 F.2d 1081 (7th Cir. 1983).
[379] Abrahamson, *supra* note 5, at 870–72.

definition of 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 construct a political economy of relaxing bottlenecks and implications for our defaults and 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 usually 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.[380] 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 originate from other platforms, such as Twitter, or TikTok, for example.[381] 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 extraction of monopoly rents to

[380] Competition & Markets Authority, *supra* note 12, at 370–74. For a framework for adversarial interoperability, see Kadri, *supra* note 11.

[381] *See*, Competition & Markets Authority, *supra* note 12, at 370–74.

reasonable returns on investments, both as it relates to prices and terms of the access. In effect, this would ensure the continuous operation of the platform as a quasi-public utility,[382] 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 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 monopolization foreseen in patent law. That said, a monopoly protected mainly by network effects is arguably more contestable than an IP-based monopoly. The remining marginal competitive pressure limits the monopoly rent extraction at the margins and argues—everything else equal—for a relatively longer protection period than for an equivalent situation in IP law.

Other than IP rights, network effect-based monopolies lack a clear start date. A monopoly lacks the 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 to the hypothetical expected concentration that would arise if the sources of indirect network effects were reduced or eliminated."[383] Yet, the authors contend that "[i]n most cases of interest, this [needed] counterfactual outcome is not observed."[384] 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.[385] 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 for all essential platforms—irrespective of how long they have been able to extract monopoly rents. Platforms can then file for a grace period of a duration

[382] See, Rahman, *The New Utilities*, *supra* note 10, at 1669–75; Rahman, *Regulating Informational Infrastructure*, *supra* note 10.

[383] Dubé et al., *supra* note 30, at 216.

[384] *Id.* at 221.

[385] *See*, Detlef Schoder, *Forecasting the Success of Telecommunication Services in the Presence of Network Effects*, 12 INFORMATION ECONOMICS AND POLICY 181, 181–82 (2000).

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 a 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 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.[386] 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 wining 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—[387] understandably so, as it provides an alternative to giving up on ideas entirely in light of potential future discrimination by essential platforms.[388] 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.[389] 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 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; her incentives to innovate increase with the expected potential to discriminate.[390] Overall, the essential facilities doctrine adequately balances allocative efficiency

[386] SCHEWICK, *supra* note 32, at 216.

[387] Mark A. Lemley & Andrew McCreary, *Exit Strategy*, STANFORD LAW AND ECONOMICS OLIN WORKING PAPER #542 6 (Dec. 2019).

[388] SCHEWICK, *supra* note 32, at 215–16.

[389] Lemley & McCreary, *supra* note 387, at 8.

[390] SCHEWICK, *supra* note 32, at 216.

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. 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,[391] 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 purportedly stated: "If you never miss a plane, you're spending too much time at the airport."[392] While "some truly silly cases" may be inevitable, there has never been evidence of systemic over-enforcement of the doctrine.[393] Specifically, the mechanism that Philipp Areeda identified, according to which an extreme case triggers a judicial decision that then gets applied mechanically and expanded to a ridiculous level,[394] has not been observed in reality.

As Weber Waller points out, silly claims "rarely convince[] a court that the facility in question [is] 'essential.'"[395] Instead, arguments against the institution of the doctrine, by and large, build on anecdotal evidence of individual cases that allegedly took the wrong turn.[396] 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.

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[391] *See*, Berry et al., *supra* note 33.

[392] Christopher Avery & Sarah Turner, *Student Loans: Do College Students Borrow Too Much--Or Not Enough?*, 26 JOURNAL OF ECONOMIC PERSPECTIVES 165, 185 (Feb. 2012).

[393] Waller, *supra* note 32, 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.")

[394] Areeda, *supra* note 32, at 841.

[395] Waller, *supra* note 32, 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.")

[396] *Id.* at 369–70.

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 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 repairable. 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, once again, 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 principals-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 Compliments

Antitrust enforcement does not live in isolation. Rather, it is deeply entangled with various forms of social and legal preconditions for and ex-ante regulation of the market. 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: horizontal break-ups,[397] regulatory interoperability requirements,[398] non-discrimination rules,[399] public utility frameworks or digital public infrastructure,[400] data sharing mandates,[401] separation of platforms and commerce,[402] and reforms to the tax code,[403] to name the most prominent examples. Far too often, recent discourse, at least tacitly, features these policy responses as exclusive measures or even assumes that they are mutually exclusive when it comes addressing concentrated power in the digital economy. Many approaches seem to rely entirely either on antitrust enforcement or on ex-ante regulation. Far too often, suggestions for doctrinal reform are perceived as alternatives to legislative initiatives and vice versa. Proposals for new forms of taxation of the digital economy tend to be discussed in isolation from both antitrust enforcement and ex-ante regulation.

Yet, no compelling substantive argument supports the pursuit of an exclusive approach to digital bottlenecks or Big Tech writ large. To the contrary, systemic limitations of antitrust law, *ex ante* regulation, and taxation as well as the urgency of the challenges necessitate concerted action. The optimal institutional set-up and regulatory framework varies with the categories of cases. Instead of thinking in alternatives, we must embrace the diversity of responses and perceive the various proposals as compliments to each other. This entails an expansion of the toolkit and an appreciation of approaches that have fallen out of favor for all the wrong reasons.

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 competitive pressures exist to discipline digital platforms. Some proposed interventions aim to reinstate competition in primary markets so as to solve any potentially negative consequences in secondary markets. Other proposals acknowledge the structural obstacles to functioning competition, namely network effects, and at least, for the interim, replace competitive processes with administrative or judicial assessments. Some favor sector specific regulation, while others place their bets on leveraging general concepts applicable

[397] Van Loo, *supra* note 35; TEACHOUT, *supra* note 35.
[398] Competition & Markets Authority, *supra* note 12, at 370–74; Kadri, *supra* note 11; Palka, *supra* note 37.
[399] *See*, van Schewick, *supra* note 32.
[400] *See*, Rahman, *The New Utilities*, *supra* note 10; Rahman, *Regulating Informational Infrastructure*, *supra* note 10; Zuckerman, *supra* note 39.
[401] *See*, Biancotti & Ciocca, *supra* note 40; Borgogno & Colangelo, *supra* note 40; Kathuria & Globocnik, *supra* note 40.
[402] Khan, *supra* note 11; Warren, *supra* note 41.
[403] Romer, *supra* note 42.

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.

Calls for break-ups of digital platforms have featured prominently in public discourse.[404] 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 *Standard Oil*.[405] Break-ups might aim to undue previous mergers, as frequently discussed in the context of Facebook, regionally compartmentalize a national conglomerate, as pursued in *Standard Oil*, or follow a logic of functional separation. In effect, most 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 is very promising in many industries, it suffers from some drawbacks in the context of infrastructure and networks effects.

Policy proposals that rest on horizontal breakups as a remedy for platform power tend to ignore or underestimate network effects.[406] Depending on their implementation, break-ups may diminish the value created by platforms as aggregators of network effects.[407] When a commerce platform is split into smaller fragments, fewer buyers and sellers will be able to transact with each other. Even far-reaching interoperability requirements might not completely mitigate these concerns. While a trade-off in the form of an increase in competition in the primary market at the expense of network-based efficiencies might be worthwhile, concerns about a swift reconsolidation remain more difficult to disregard. 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 consolidation.[408] Even after a breakup, network effects will continue to force consolidation. In that sense, a breakup might only turn the clock back and restart the competition for the markets. Within a short period, the market will likely tip again, and a new monopolistic platform will emerge.

Next, take the suggestion for a functional separation of platforms and commerce, championed by Lina Khan.[409] 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. It draws

[404] TEACHOUT, *supra* note 35; Warren, *supra* note 41.

[405] See, Standard Oil Co. v. U.S., 1910 221 U.S. 1.

[406] Fiona Scott Morton, *Why 'Breaking up' Big Tech Probably Won't Work*, WASH. POST, https://www.washingtonpost.com/opinions/2019/07/16/break-up-facebook-there-are-smarter-ways-rein-big-tech/.

[407] The creation of the essential facilities doctrine was driven by a concern of waste, see United States v. Terminal Railroad 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.")

[408] Morton, *supra* note 406.

[409] Khan, *supra* note 11.

on historical examples of separation frameworks in the railroad, banking, television networks, and telecommunications sector.[410] 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.[411] Functional separation requirements can indeed eliminate these conflicts of interests[412] and spur innovation.[413] As Khan lays out, it may also address broader concerns of monopolizing cross-financing within large conglomerates, to media diversity, and systemic resilience of critical infrastructure.[414]

While a separation regime would provide a potent tool to curtail platform power and to realign incentives, it would leave significant gaps and face challenges in the implementation stage. First, a separation regime does not address the extraction of monopoly rents from the market for platforms. A platform isolated from commerce can still charge monopoly prices and impose monopoly terms on the secondary market. The monopolists' de facto tax on commerce[415] would still impose dead-weight losses on a significant part of the economy. As shown above, tolerating persistent monopolies is far from optimal for innovation. Second, functional separation frameworks only appear straightforward and easy to administer; in reality, they can become rather complex. This is because they purport to resemble the clarity of horizontal break-ups, while, in fact, functional separation regimes build on behavioral limitations. Thus, they might well lose their perceived simplicity-advantage over the essential facilities doctrine. Two examples from the banking sector showcase this limited character of structural separation regimes: the famous Glass-Steagall legislation,[416] which mandated a separation of deposit taking commercial banking and investment banking, and the more recent Volcker Rule, which mandates a separation of proprietary trading[417] from all other forms banking activities. The former prohibits entities engaged in investment banking from taking deposits,[418] the latter bars deposit taking entities from proprietary trading.[419] The behavioral character of the limitation at the core of frameworks matters, even as the framework, overall, functions as "structural law."[420] They require ongoing supervision while a horizontal break-up of the ownership structure does not. Horizontal break-ups, on the other hand, rely on competition as a disciplining force; the general merger review is sufficient to prevent a

[410] *Id.* at 1037–51.
[411] *Id.* at 983–1015.
[412] *Id.* at 1052–55.
[413] *Id.* at 1066–67.
[414] *Id.* at 1067–74.
[415] Thurman Arnold, *supra* note 20.
[416] The legislation is named after the ardent segregationist Senator Carter Glass and Representative Henry B. Steagall.
[417] Defined in 12 U.S.C. § 1851(h)(4).
[418] Sec. 21(a)(1) of the Banking Act of 1933 ("[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.
[419] 12 U.S.C. § 1851 ("Prohibition 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.").
[420] See, John C. Coates, *The Volcker Rule as Structural Law: Implications for Cost–Benefit Analysis and Administrative Law*, 10 CAPITAL MARKETS LAW JOURNAL 447, 450–55 (2015).

reconsolidation of the former monopolist. In effect, functional separation frameworks tend to cause difficulties where boundaries between activities are fuzzy, as for digital platforms with varying degrees of integration. Third, strict functional separation regimes relinquish efficiency gains through technological integration of the platform's own services, based on increased convenience and security. Depending on the circumstances, these losses may or may not be offset by the frameworks' benefits.

Next, take suggestions to outlaw certain problematic platform behavior, for example, self-preferencing or specific elements in the platforms' 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 Order[421] 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.[422] 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. Again, nondiscrimination requirements or bans on certain terms of service do not address the pressing issue of excessive monopoly rent extraction.

Mandatory data sharing paves another path toward more competition in digital platform markets.[423] 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 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 serious privacy concerns which in turn limit the proposal's potential.[424]

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)[425] and the California Consumer Privacy Act.[426] The ability to

[421] *Open Internet Order*, 25 FCC Rcd 17905 (21).
[422] For an account of the Open Internet Order, see van Schewick, *supra* note 32, at 152–62.
[423] Biancotti & Ciocca, *supra* note 40; Borgogno & Colangelo, *supra* note 40.
[424] Kathuria & Globocnik, *supra* note 40, at 14–23.
[425] Art. 20, Regulation (EU) 2016/679, 2016 O.J. (L119) 1, 19-20.
[426] Cal. Civ. Code §§ 1798.100(d), 130(a)(2).

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.[427] 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 markets[428] with high externalities in the form of third-party privacy harms.[429]

Finally, consider isolated regulatory interoperability requirements which would force platforms to open their APIs and let competitors participate in the network effects of the platform.[430] 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 features 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 lefts by any ex-ante regulation, address platforms in a technological neutral manner, 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 no limits. Finally, the doctrine can ensure competition and further innovation in new markets that lack comprehensive regulatory frameworks.

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,[431] and this section cannot provide a universally applicable concept. The focus on *digital*

[427] *See*, Art. 4(1) GDPR, Cal. Civ. Code §§ 1798.140(o)(1).

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

[429] For externalities in the data economy *see*, Omri Ben-Shahar, *Data Pollution*, 11 JOURNAL OF LEGAL ANALYSIS 104 (2019); Dirk Bergemann et al., *The Economics of Social Data* (Apr. 2020).

[430] See, Palka, *supra* note 37.

[431] Khan, *supra* note 11, at 1080–81. For an apt positive definition of platforms, *see* Cohen, *supra* note 10, 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.")

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."[432] 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 channels."[433] 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 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 facility[434] 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 justify 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 should be considered justified. A regulatory agency could check and challenge allegations of security of 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

[432] Khan, *supra* note 11, at 1081.
[433] *Id.*
[434] *See*, Abrahamson, *supra* note 5.

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, including access to quick results.

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 *AmEx* decision, the Supreme Court even demanded that the plaintiff show harm on both sides of a two-sided market.[435] 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 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, she will be best suited to produce necessary evidence.

To properly define remedies, let us re-examine *U.S. v. Terminal Railroad Association*.[436] The Court did not set the conditions or rates for access to the facility but deferred to the parties and the lower courts to define adequate terms and organizational structures. In doing so, the Court wisely deferred to the least cost drafters, the parties that 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 Court's expectations. The threat of a break-up served as an incentive for the Association tort reform is charter defining the criteria to include competitors.

A renewed essential facilities doctrine can rely on the same mechanism when applied to digital platforms. Where access rights are preferable to structural break-ups, authorities or courts could define 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 in the business of drafting contracts for access seeking competitors.

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.[437] In contrast to most other proposals, neither a revival nor an

[435] Ohio v. Am. Express Co., 2018 138 S. Ct. 2274, 2284, 2303–4.

[436] United States v. Terminal Railroad Ass'n of St. Louis, 224 U.S. 383 (1912).

[437] Additionally, the government, mainly in the form of the Department of Justice, the FTC, and states' attorney generals, plays a crucial part in advancing and the new standards.

expansion of the essential facilities doctrine necessitates regulatory changes.[438] The Supreme Court derived the essential facilities doctrine from an interpretation of the Sherman Act and the Court has the power to renew it.[439] In fact, as the 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,[440] 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.[441]

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,[442] 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.[443] 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 suffice for regulatory action on the federal level, individual states could step up. The recent California Consumer Privacy Act demonstrates 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.[444]

Codifying the essential facilities doctrine will prove easier then 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

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[438] In that sense, it proves similar to the suggestions for functional separation or platforms and commerce, see Khan, *supra* note 11, at 1083.

[439] The *Eerie* doctrine that significantly limits the development of federal case law does not apply to construing the Sherman Act.

[440] Wu, *supra* note 281, at 117–18.

[441] *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.

[442] Warren, *supra* note 41.

[443] Naomi Nix, *Retailers Eager to Lodge Antitrust Complaints Against Amazon and Google*, BLOOMBERG.COM (Jul. 1, 2019), https://www.bloomberg.com/news/articles/2019-07-01/retailers-eager-to-lodge-amazon-google-antitrust-complaints; *Competition and Consumer Protection in the 21st Century Hearings (Project Number P181201)*, No. FTC-2019-0032-0019, 1 (Jun. 2019).

[444] *See, Rice v. Norman Williams Co.*, 458 U.S. at 659–61; *Exxon Corp. v. Governor of Maryland*, 437 U.S. at 132–35.

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,[445] 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.[446] 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. Monopolistic firms 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.[447] 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."[448] 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 reign in the gatekeeper power of the Big Tech. After decades of restricting antitrust enforcement, it is, once again, high time to revive, renew, and expand the essential facilities doctrine to open up the infrastructure underlying commerce and to create an open, innovative, and participatory economy.

[445] The Lochner-era of Supreme Court jurisprudence is named after Lochner v. New York, 198 U.S. 45 (U.S. 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.

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

[447] BAKER, *supra* note 32, at 198.

[448] Arnold, *supra* note 2, at 1.