

ANTITRUST INTEROPERABILITY REMEDIES

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Compelled interoperability can be a useful judicial or statutory remedy for dominant firms, including digital platforms with significant market power in a product or service. They can address competition concerns without interfering unnecessarily with the structures that make digital platforms attractive and that have contributed so much to economic growth.

Given the wide variety of structures and business models for big tech, “interoperability” must be defined flexibly. Approaches to interoperability begin with the premise that anything that can be organized within a firm can also be organized in a market, and vice versa. The key to a good interoperability solution is to permit individual assets to function competitively where that is preferable but collaboratively when collaboration produces better results. Interoperability can include everything from “dynamic” interoperability, which requires real-time sharing of data and operations, to “static” interoperability which requires portability but not necessarily real-time interactions.

Interoperability is not the best remedy in all situations, nor even for all of those that involve digital platforms. For example, it is rarely the best remedy for nondominant assets, even those that are sold on two-sided digital markets.

Tested by these criteria, the proposed American Innovation and Choice Online Act falls short. Without assessing a market power requirement, it would compel interoperability of ordinary competitive products, and in ways that are likely to produce significant private and enforcement costs and to encourage substantial free riding without offering any competitive benefit.

INTRODUCTION

Today the antitrust press focuses heavily on the practices of large digital companies. The firms that have evoked so much attention are

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Alphabet (Google), Amazon, Apple, and Meta (Facebook).¹ Others have managed to avoid that spotlight. These include Microsoft, which is bigger than three of the four principal targets,² and other digital sellers, including Uber and eBay. Equally large traditional retailer Walmart has escaped notice as well, even though it engages in many of the same practices.³ Indeed, to the extent their customers have less mobility, effects can be more harmful in brick-and-mortar stores. For example, if a Walmart store engages in “self-preferencing” of house brands, the customer can escape by driving to a different store. If Amazon does the same thing, the customer can flee with a mouse click.

This Piece sidesteps most of the interesting questions about whether these firms have committed antitrust violations. Rather, it focuses on appropriate remedies. One of the most frequently mentioned remedies in the general press or occasionally by politicians or interest groups is “breakup,”⁴ often given without much detail about what that involves.⁵

1. See, e.g., Chris Alcantara, Kevin Schaul, Gerrit De Vynck & Reed Albergotti, *How Big Tech Got So Big: Hundreds of Acquisitions*, Wash. Post (Apr. 21, 2021), <https://www.washingtonpost.com/technology/interactive/2021/amazon-apple-facebook-google-acquisitions/> (on file with the *Columbia Law Review*) (describing Amazon, Apple, Facebook, and Google as the “Big 4” of tech companies). Both “Meta” and “Facebook” are used throughout this Piece. For clarity, “Meta” refers to the entity that is the current parent company; “Facebook” refers to either the social media and networking service (now owned by Meta) or the parent company as it was formerly known (now Meta), depending on the context.

2. See *Largest Companies by Market Cap, Cos. Mkt. Cap.*, <https://companiesmarketcap.com> [<https://perma.cc/T7YM-FMBX>] (last visited Sept. 10, 2022) (showing a continuously updated ranking of firms by market capitalization). Among the most valuable tech firms the ranking is Apple, Microsoft, Alphabet, Amazon, Tesla, and Meta. *Id.* The position of Meta (formerly known as Facebook) reflects a steep decline in shareholder value that occurred in early February 2022. See Alex Sherman, *Facebook’s \$232 Billion Fall Sets Record for Largest One-Day Value Drop in Stock Market History*, CNBC (Feb. 3, 2022), <https://www.cnbc.com/2022/02/03/facebook-232billion-drop-in-value-sets-all-timerecord.html#:~:text=Facebook%20parent%20Meta%20lost%20more,market%20value%20in%20September%202020> [<https://perma.cc/SN8J-9EK5>] (last updated Feb. 4, 2022).

3. Nathaniel Meyersohn, *Scathing Report Says Walmart’s Grocery Store Dominance Must Be Stopped*, CNN Bus. (June 27, 2019), <https://www.cnn.com/2019/06/27/business/walmart-groceries-monopoly-amazon-antitrust> [<https://perma.cc/6NZ8-J38H>] (describing Walmart’s dominance in the grocery business).

4. See, e.g., 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> [<https://perma.cc/B7X7-RR8P>] (arguing that “the government must break up monopolies”); see also Zephyr Teachout, *Break ‘Em Up: Recovering Our Freedom From Big Ag, Big Tech, and Big Money 12* (2020) (arguing that tech corporations like Facebook and Amazon should be broken up). But see Maham Usman, Comment, *Breaking Up Big Tech: Lessons From AT&T*, 170 U. Pa. L. Rev. 523, 525 (2022) (offering a salient critique of breakup remedies).

5. One more cautious approach is John Kwoka & Tommaso Valletti, *Unscrambling the Eggs: Breaking Up Consummated Mergers and Dominant Firms*, 30 *Indus. & Corp. Change* 1286, 1288 (2021), although the authors focus largely on the undoing of previous mergers.

The other obvious remedies are prohibitory or mandatory injunctions, as well as damages in cases brought by private plaintiffs.⁶

Another alternative with a surprisingly robust antitrust history is “interoperability” remedies, which can be less intrusive or upsetting of market structure than breakups and often more effective than simple prohibitory injunctions.⁷ The term “interoperability” is generally associated with distinct firms that have some element of their operations linked together.⁸ Its principal feature is the reliable and timely transfer of useful operational data among the participating entities.⁹ Compelled interoperability can address many competition problems without interfering unnecessarily with the structures that make networked digital platforms attractive and that have contributed so much to economic growth.¹⁰ Indeed, in many cases interoperability can expand the range of positive network effects by effectively aggregating the networks of multiple platforms.

Given the wide variety of network structures and business models for big tech, the mechanisms of interoperability must be defined broadly. It can realistically include everything from “dynamic” interoperability, which

6. On the case for broader use of injunctions, see Herbert Hovenkamp, *Antitrust and Platform Monopoly*, 130 *Yale L.J.* 1952, 2016–18 (2021) [hereinafter Hovenkamp, *Platform Monopoly*] (arguing that injunctions “are more narrowly focused than divestitures and their results are typically easier to predict”). For a discussion of antitrust damages for private plaintiffs, see Herbert Hovenkamp, *Antitrust Harm and Causation*, 99 *Wash. U. L. Rev.* 787, 837 (2021) [hereinafter Hovenkamp, *Antitrust Harm and Causation*] (discussing damages under the Clayton Act).

7. See Fiona M. Scott Morton, Gregory S. Crawford, Jacques Crémer, David Dinielli, Amelia Fletcher, Paul Heidhues, Monica Schnitzer & Katja Seim, *Equitable Interoperability: The “Super Tool” of Digital Platform Governance* 1–2 (2021), <https://tobin.yale.edu/sites/default/files/Digital%20Regulation%20Project%20Papers/Digital%20Regulation%20Project%20-%20Equitable%20Interoperability%20Discussion%20Paper%20No%204.pdf> [<https://perma.cc/DDC3-DRXN>] (describing interoperability as “less intrusive” than many other forms of regulation).

8. For definitions, see John Palfrey & Urs Gasser, *Interop: The Promise and Perils of Highly Interconnected Systems* 5 (2012) (defining interoperability as the “ability to transfer and render useful data and other information across systems, applications, or components”).

9. *Id.* Some authors emphasize the extent to which the network becomes more valuable as it has more participants either on the same side (direct network effects) or the opposite side (indirect network effects). See, e.g., Michael L. Katz & Carl Shapiro, *Network Externalities, Competition, and Compatibility*, 75 *Am. Econ. Rev.* 424, 424–25 (1985). Others stress that network production requires the efficient movement of information among multiple participants. See, e.g., Yochai Benkler, *The Wealth of Networks: How Social Production Transforms Markets and Freedom* 3–10 (2006) (describing a shift over the past century toward an economy centered on information, which “promises to enable social production and exchange to play a much larger role . . . than they ever have in modern democracies”).

10. For a very good introduction to the basic economic issues governing interoperability, see generally Michael Kades & Fiona Scott Morton, *Interoperability as a Competition Remedy for Digital Networks* (2020) (unpublished working paper), <https://equitablegrowth.org/working-papers/interoperability-as-a-competition-remedy-for-digital-networks/> [<https://perma.cc/26GU-W3KD>].

requires real time sharing of operational information and data, to “static” interoperability, which requires data portability but not necessarily real time interactions. Also included are the compelled sharing of productive assets, most frequently intellectual property (IP) rights. Further, interoperability requirements typically include limitations on discrimination. For this reason they are relevant to the debate about “self-preferencing,” or the extent to which a firm prefers its own products or services over those of others. The self-preferencing legislation that Congress is considering at this writing also includes interoperability rules.¹¹

In some cases, interoperability can occur at the level of management. Any increase in competition achieved by breaking a firm into pieces can also be created by leaving the firm’s external structure intact but creating mechanisms that facilitate internal competition among sellers.¹²

Designing such remedies requires identification of the particular structures or practices that are making these markets less competitive than they might be. Even in cases involving market-dominating products, interoperability is not always the best remedy. It can sometimes be excessive and difficult to implement. Further, in some cases it must be combined with other remedies. Interoperability remedies differ from one another depending on the structure of the firm, the types of products or services that it offers, and the competitive problems that have been identified.¹³

Approaches to antitrust remedies should begin with one important principle: Market forces generally determine a business organization’s size and shape. These forces include structural and operational economies as well as user preference. “Shape” here refers not merely to a firm’s horizontal size but also to the extent of its vertical integration or extensions into collateral markets.¹⁴ Simply breaking up a firm without examining the reasons for its size and shape will do more harm than good.

A promising approach for some cases is the creation of a “commons” that permits an asset to be shared. Commons production dates back to the Middle Ages and occurs when the productivity of joint operation is higher or costs less than that of enforcing segregating boundaries. For example, medieval farmers might have grown their crops on exclusive parcels but grazed their livestock on common pasturage with shared management

11. See *infra* notes 152–160 and accompanying text.

12. See *infra* notes 161–171 and accompanying text.

13. For a more general survey of this territory, see Harry First & Spencer Weber Waller, *Bespoke Antitrust* 4–5 (N.Y. Univ. Sch. of L., L. & Econ. Rsch. Paper Series Working Paper No. 22-15, 2022), <https://ssrn.com/abstract=4057626> [<https://perma.cc/YRF6-GHP4>] (explaining how “[r]emedies in antitrust offer one of the most fertile fields for individualizing the law”).

14. See G.E. Hale & Rosemary D. Hale, *Market Power: Size and Shape Under the Sherman Act* 240–69 (1958).

obligations.¹⁵ Today, no one would advocate for a breakup of the telephone system into discrete networks unable to communicate with one another. Here, an interoperability decree preserves a single unified network while enabling implementing participants to compete with one another.¹⁶

I. INTEROPERABILITY OF FIRMS

One of Ronald Coase's most important insights was that firms and markets do precisely the same thing, which is organize production and distribution.¹⁷ Whether that occurs through a market or through a firm is a matter of comparative cost and payoff as well as historical evolution. As a result, the term "interoperability" assumes that we have already made a prior decision to have separate firms who can function beneficially by coordinating their behavior. For example, multiple newspapers wishing to share news stories might require interoperability. But if a single firm owned all of the newspapers, this would be nothing more than management coordination within the firm.¹⁸ The term "interoperability" thus implies the existence of separate firms competing individually in some aspects of their business but also interacting with one another, whether by agreement or state compulsion. To be sure, intrafirm coordination presents difficulties as well,¹⁹ but these are engineering and perhaps agency cost problems, rarely antitrust problems.

Many networks are controlled by multiple business entities. Others have either been organized as single firms or else controlled by one. Prior to its breakup, AT&T was a network organized as a single firm. AT&T owned and

15. See Elinor Ostrom, *Governing the Commons: The Evolution of Institutions for Collective Action* 61–65 (1990). On managing innovation's interaction with the commons, see generally Christina Bohannon & Herbert Hovenkamp, *Creation Without Restraint: Promoting Liberty and Rivalry in Innovation* 325–36 (2012) ("When internal boundaries are difficult to enforce, commons management can give society the benefit of communal development *and* competition.").

16. See *infra* notes 119–123 and accompanying text.

17. See, e.g., R.H. Coase, *The Nature of the Firm*, 4 *Economica* 386, 395 (1937) (explaining that firms are economically incentivized to organize and produce goods and services internally until it becomes cheaper to do so by buying from another firm); see also R.H. Coase, *The Firm, the Market, and the Law* 57–74 (1988) (explaining that firms are economically incentivized to organize and produce goods and services internally until it becomes cheaper to do so by buying from another firm). For a good overview of Coase's insight, see Thomas S. Ulen, *The Coasean Firm in Law and Economics*, 18 *J. Corp. L.* 301, 307 (1992) (same).

18. See Steven G. Medema, *Coase, Costs, and Coordination*, 30 *J. Econ. Issues* 571, 573 (1996) (discussing Coase's conceptualization of firms' coordination costs).

19. See M. Harris, C.H. Kriebel & A. Raviv, *Asymmetric Information, Incentives and Intrafirm Resource Allocation*, 28 *Mgmt. Sci.* 604, 604–05 (1982) (discussing problems of intrafirm coordination when information is not shared among divisions).

operated its lines, instruments, and interconnection protocols.²⁰ Other historical examples were Major League Soccer and the Women's National Basketball Association, which started out as single entities that owned all of their teams. Making rules of play and coordinating schedules was strictly a problem of intrafirm management. Later these associations evolved into networks more like the major league sports networks today, in which the teams acquired separate ownership.²¹ At that point, interoperability became necessary to make league play possible.

An example of a multifirm network controlled by a single dominant firm is Microsoft's Windows operating system. While that system is a network of numerous and separate applications and hardware producers, Microsoft controls the system. Applications and hardware manufacturers who operate on this system function as its licensees.²² The same thing is true of Uber. Its drivers are nonemployee producers within the Uber system, but Uber makes the rules and their relationship with Uber is as agents rather than as managing participants.²³ This makes the legal structure of Uber different from, say, a traditional taxi company that owns its fleet of taxis.

For multifirm networks without a dominant firm, decisionmaking is more collaborative. The individual participants are linked together by contract or license agreements and share significant operational

20. See Joseph D. Kearney, *From the Fall of the Bell System to the Telecommunications Act: Regulation of Telecommunications Under Judge Greene*, 50 *Hastings L.J.* 1395, 1403 & n.18 (1999) (describing the unitary structure of the Bell system, with twenty distinct operating companies, the Long Lines division for long distance calls, and the Western Electric subdivision for production of telephone instruments). For a good contemporary analysis of the breakup, see Gerald R. Faulhaber, *Telecommunications in Turmoil: Technology and Public Policy*, at xvi-xviii (1987) ("Despite the efforts of our best minds, and regardless of the eventual outcome, our public policy process launched this country on a blind experiment in telecommunications."). A more popular account is Steve Coll, *The Deal of the Century: The Breakup of AT&T* (1987) (detailing the downfall of AT&T's telecommunications monopoly).

21. See Lacie L. Kaiser, *The Flight From Single-Entity Structured Sport Leagues*, 2 *DePaul J. Sports L. & Contemp. Probs.* 1, 9–11 (2004) (describing these developments); see also *Fraser v. Major League Soccer, LLC*, 284 F.3d 47, 55–56 (1st Cir. 2002) (questioning whether Major League Soccer should be treated as a single entity for antitrust purposes). The Supreme Court rejected single-entity status for the National Football League in *American Needle, Inc. v. NFL*, 560 U.S. 183, 204 (2010).

22. See Richard J. Gilbert, *Networks, Standards, and the Use of Market Dominance: Microsoft (1995)*, in *The Antitrust Revolution: Economics, Competition, and Policy* 409, 424–27 (John E. Kwoka, Jr. & Lawrence J. White eds., 3d ed. 1998) (discussing how Microsoft's market dominance allowed for interoperable solutions).

23. Uber's terms and conditions for drivers in the United States cannot be accessed via Uber's external website. Instead, it requires drivers to sign into their accounts for the terms and conditions to be accessed. Uber, *Agreeing to Terms and Conditions*, <https://help.uber.com/driving-and-delivering/article/agreeing-to-terms-and-conditions?nodeId=44cf1f0e-27ca-4919-9621-f1321a0381c1> (on file with the *Columbia Law Review*) (last visited Oct. 21, 2022).

responsibility. For example, the comprehensive rules made by the National Collegiate Athletic Association (NCAA) and major professional sports leagues are regarded as agreements among the individual teams or their owners.²⁴ In such cases the social value of networks is that, if properly organized, they can attain efficiencies equivalent to those that accrue to a single firm, while also behaving competitively *within* the network.

Ownership and contractual relationships are simply two alternative mechanisms for designing production. One important difference for antitrust, however, is that the activities of a single firm are unilateral, governed by § 2 of the Sherman Act's prohibition of monopoly.²⁵ By contrast, decisionmaking by the multiple firms operating on a common network is governed by the much more aggressive provisions of § 1 of the Sherman Act, which prohibits anticompetitive agreements.²⁶ A good example is the *NCAA v. Alston* case, involving the compensation of NCAA athletes.²⁷ A unitary firm could pay employees any wage it wishes subject only to government regulation of wage rates. By contrast, an agreement among NCAA members limiting athlete competition constitutes price-fixing.²⁸

Interoperability of constituent parts is an inherent feature of a single firm if it is functioning properly. For example, we did not worry very much about "interoperability" of the telephone network as long as AT&T owned it. Management would ensure that its numerous subsidiaries and branches coordinated operations with one another. If lack of coordination did occur, as sometimes happens within large firms, controlling it was an agency cost or management problem, not an antitrust problem. Once the big breakup occurred, however, interoperability became an issue, addressed initially in an antitrust consent decree and later under the 1996 Telecommunications Act.²⁹

II. DOMINATED AND COLLABORATIVE NETWORKS: STATUTORY COVERAGE

Mandated interoperability can be an antitrust remedy for both unilateral and multilateral conduct. The first occurs when a single firm owns the entire market-dominating network, as did AT&T prior to its breakup. AT&T's persistent refusal to interconnect with outsiders'

24. E.g., *NCAA v. Alston*, 141 S. Ct. 2141, 2164–66 (2021) (affirming the district court's decision condemning a collaborative agreement among NCAA schools to limit athlete compensation).

25. 15 U.S.C. § 2 (2018).

26. *Id.* § 1.

27. See *Alston*, 141 S. Ct. at 2151 (explaining how plaintiffs' claims arise under § 1 of the Sherman Act).

28. See *id.* at 2153 (acknowledging that the present practice in the NCAA constitutes price-fixing).

29. See Kearney, *supra* note 20, at 1395–96; see also *infra* notes 60–70 and accompanying text.

technologies is largely what provoked the antitrust challenges.³⁰ Because the antitrust laws reach unilateral conduct only under the monopolization provision of § 2 of the Sherman Act, they apply only when the actor is dominant.³¹ Most two-sided platforms for digital product sales or periodicals such as magazines and newspapers are not dominant firms.³²

Antitrust usually has no role policing the internal interoperability practices of a single firm. It can become relevant, however, when a firm with dominance in a particular product refuses to interconnect with outsiders in ways that could make the network larger and more socially valuable. In *MCI Communications Corp. v. AT&T*, MCI in particular wanted to operate microwave (wireless) long distance service that certainly would have made the network more valuable but that required interconnection to AT&T's system.³³ Applying antitrust law's essential facilities doctrine, the Seventh Circuit agreed that the refusal to interconnect was anticompetitive.³⁴ An important premise was AT&T's status as a monopoly network provider of telephone services.³⁵

By contrast, collaborative networks have a great potential for growth and typically strong incentives to maintain interoperability among themselves, at least if they do not have a dominant firm.³⁶ Here, the competitive dangers are both agreed upon output restraints such as price-fixing, as well as concerted refusals to deal vis-à-vis outsiders. The antitrust rules for addressing these collaborations under § 1 of the Sherman Act are considerably more aggressive than those applied to unilateral conduct.

An important and often misunderstood example of a collaborative network with price restraints is *United States v. Trans-Missouri Freight Ass'n*, the Supreme Court's very first antitrust decision on the merits.³⁷ Both the Eighth Circuit and the Interstate Commerce Commission (ICC) had approved of the network, under which a group of railroads who operated individually in single states organized the scheduling and handoff of interstate freight shared by multiple railroads—presumably efficient and desirable activities. As the lower court observed:

The fact that the business of railway companies is irretrievably interwoven, that they interchange cars and traffic, that they act as agents for each other in the delivery and receipt of freight and

30. See *infra* notes 59–64 and accompanying text.

31. 15 U.S.C. § 2.

32. On the range of firms, from dominated to highly collaborative, see Hovenkamp, *Platform Monopoly*, *supra* note 6, at 1969–2000.

33. 708 F.2d 1081, 1131–33 (7th Cir. 1983).

34. *Id.* at 1133–36.

35. *Id.* at 1132.

36. On the relevance of single firm dominance, see *infra* notes 96–103 and accompanying text.

37. 166 U.S. 290 (1897).

in paying and collecting freight charges, and that commodities received for transportation generally pass through the hands of several carriers, renders it of vital importance to the public that uniform rules and regulations governing railway traffic should be framed by those who have a practical acquaintance with the subject, and that they should be promulgated and faithfully observed.³⁸

The lower court also approved a uniform set of freight classifications as well as standardized rates.³⁹ The latter triggered the Sherman Act challenge. The Supreme Court rejected the Eighth Circuit's conclusions, noting that the Sherman Act condemned "every" agreement in restraint of trade, allowing no exceptions.⁴⁰

In cases of voluntary interoperability, a decree might also order the network to admit outsiders, such as occurred in the *Associated Press v. United States* collaborative wire service case.⁴¹ The member newspapers of the Associated Press (AP) produced news stories and circulated them electronically among the members but had restrictive rules governing membership of additional newspapers.⁴² This restrictive membership policy denied the public the value of a network producing a larger range of external benefits, but it also increased the advantage that member newspapers had over nonmember competitors.⁴³ The Court issued an order forbidding the association from discriminating against nonmember newspapers.⁴⁴

In *United States v. Crescent Amusement Co.*, the court enjoined a consortium of film exhibitors from agreeing not to license the films of independents.⁴⁵ The agreement also implicated the producers and

38. *United States v. Trans-Mo. Freight Ass'n*, 58 F. 58, 79–80 (8th Cir. 1893); see also *id.* at 75–76, 78 (relying on and quoting Interstate Com. Comm'n, Second Annual Report 25 (1888), which had advocated for "mutual arrangements" among the railroads to make such arrangements, including the setting of common rates). The ICC annual report spoke strongly of the need for mutual running arrangements but also of the need for enforcement, concluding:

[T]he voluntary establishment of such extensive responsibility would require such mutual arrangements between the carriers as would establish a common authority which should be vested with power to make traffic arrangements, to fix rates and provide for their steady maintenance

Interstate Com. Comm'n, *supra*, at 25.

39. *United States v. Trans-Mo. Freight Ass'n*, 53 F. 440, 451–52 (D. Kan. 1892).

40. *Trans-Mo. Freight Ass'n*, 166 U.S. at 312, 346 (noting that Sherman Act § 1 reached "every" contract in restraint of trade, whether reasonable or unreasonable).

41. See 326 U.S. 1, 2–22 (1945) (requiring a collaborative wire service operated by newspapers to admit additional members).

42. *Id.* at 4–5.

43. *Id.* at 17–18.

44. *Id.* at 21 ("Interpreting the decree to mean that AP news is to be furnished to competitors of old members without discrimination through By-Laws controlling membership, or otherwise, we approve it.").

45. 323 U.S. 173, 188 (1944) (upholding the injunction granted by the lower court).

distributors of the approved films.⁴⁶ The decree enjoined the participants from agreeing not to license independent films but did not forbid a theater acting unilaterally from deciding which films to exhibit.⁴⁷

These concerns could become relevant to one phenomenon that began in the summer of 2022: Uber is entering deals with taxicab companies that will enable customers to use the Uber app to call traditional taxis as well.⁴⁸ As a matter of network structure that could be a good thing. It permits a single platform, the Uber app, to aggregate the offerings of numerous companies. A prospective customer will see all of them on the Uber app, and all of the participating drivers can compete for the same customers. At the same time, however, price-fixing and anticompetitive exclusion are both risks. For example, if an app aggregated all or most of the hailed rides in a town, it might be in a position to set the price for all. The *New York Times* story reporting the deal notes that the fare for all participants “will be based on Uber’s pricing and policies, including surge pricing”⁴⁹ Alternatively, if it excluded price cutting sellers, denying them the advantage of these network effects, it could create a situation similar to the ones in the *Associated Press*⁵⁰ and *Terminal Railroad*⁵¹ cases discussed below.

III. JUDICIALLY MANDATED INTEROPERABILITY

Interoperability can be voluntary, legislated,⁵² or mandated by a court as a remedy. Good examples of voluntary interoperability are email⁵³ and many patent pools, including the FRAND system for cross-licensing of

46. Id. at 183–85.

47. Id. at 187–89.

48. Winnie Hu, Kellen Browning & Karen Zraick, Uber Partners With Yellow Taxi Companies in N.Y.C., *N.Y. Times* (Mar. 24, 2022), <https://www.nytimes.com/2022/03/24/business/uber-new-york-taxis.html> (on file with the *Columbia Law Review*).

49. Id. The article also reports that Uber has already entered into several similar agreements in Europe. Id.

50. See *supra* text accompanying notes 41–44.

51. See *infra* text accompanying notes 104–115.

52. The EU has proposed legislation, called the Digital Markets Act (DMA), which increases interoperability in text messaging. European Commission Proposal for a Regulation of the European Parliament and of the Council (Digital Markets Act), at 26–27, COM (2020) 842 final (Dec. 15, 2020), <https://eur-lex.europa.eu/legal-content/en/txt/?qid=1608116887159&uri=com%3a2020%3a842%3afin> [<https://perma.cc/98T2-8UYH>] (discussing both portability and interoperability). For an executive summary of the DMA, see also The Digital Market Act: Ensuring Fair and Open Digital Markets, Eur. Comm’n, https://ec.europa.eu/info/strategy/priorities-2019-2024/europe-fit-digital-age/digital-markets-act-ensuring-fair-and-open-digital-markets_en [<https://perma.cc/H3DK-RESN>] (last visited Sept. 5, 2022). On the DMA’s limited requirements regarding interoperability, see Scott Morton et al., *supra* note 7, at 5–7.

53. See Craig Partridge, The Technical Development of Internet Mail, *IEEE Annals Hist. Computing* (2008), <http://emailhistory.org/papers/partridge-email.pdf> [<https://perma.cc/V73A-WZN3>].

patents in information-sharing technologies.⁵⁴ Interoperability in the telephone system was originally mandated by a judicial decree⁵⁵ but later legislated into the 1996 Telecommunications Act.⁵⁶ Judicially mandated interoperability rules are well established in the history of antitrust enforcement, evidenced not only by the *Associated Press* decree in 1945⁵⁷ but also in the Supreme Court's *Terminal Railroad* decision in 1912.⁵⁸

Judicially mandated interoperability has both limitations and significant strengths. An obvious limitation is that it must be predicated on a violation. While an antitrust court's equity powers are very broad,⁵⁹ they kick in only when the antitrust laws have been violated. They do not give courts a roving mandate to fix markets in the absence of such proof. In the case of *AT&T*, the principal antitrust violation under litigation was unilateral refusals to deal,⁶⁰ an area where antitrust jurisprudence has always been highly restrictive—more so today than it was in the early 1980s.⁶¹

Judicially created interoperability remedies are a form of injunction, falling under the court's statutory authority to "prevent and restrain" antitrust violations when the plaintiff is the government⁶² or to provide relief against "threatened loss or damage" from an antitrust violation when the plaintiff is a private party.⁶³ These remedies are not inherently structural because they themselves do not force the divestiture, or spin-off, of any productive asset. They may require sharing of some information, other productive assets or, in some cases, reallocation of management.

Sometimes an interoperability remedy is attached to a structural remedy. For example, as a result of the 1982 consent decree, AT&T divided into seven regional operating systems, separate from AT&T's long-distance division and also from Western Electric, its manufacturer of instruments.⁶⁴ This breakup would have created chaos without a further decree

54. See Herbert Hovenkamp, FRAND and Antitrust, 105 *Cornell L. Rev.* 1683, 1684 (2020) (noting that FRAND is essentially a voluntary agreement among patent holders).

55. *United States v. AT&T*, 552 F. Supp. 131, 141–42 & n.42 (D.D.C. 1982), *aff'd sub nom. Maryland v. United States*, 460 U.S. 1001 (1983).

56. See *infra* notes 68–70 and accompanying text.

57. See *supra* notes 38–39 and accompanying text.

58. See *infra* notes 102–115 and accompanying text.

59. See, e.g., 15 U.S.C. § 25 (2018) (authorizing federal courts to "prevent and restrain" antitrust violations, without further specifics). On the scope of this power, see Hovenkamp, *Antitrust Harm and Causation*, *supra* note 6, at 837–40.

60. *AT&T*, 552 F. Supp. at 223.

61. See, e.g., *Verizon Commc'ns, Inc. v. Law Offs. of Curtis V. Trinko, LLP*, 540 U.S. 398, 409 (2004) (noting that unilateral termination of a "voluntary" course of dealing is indicative of anticompetitive behavior but not when the course of dealing is required by law).

62. 15 U.S.C. § 25.

63. *Id.* § 26.

64. *AT&T*, 552 F. Supp. at 135 n.3, 141–42, 142 n.41, 224; see also *Maryland v. United States*, 460 U.S. 1001, 1001 (1983).

mandating interoperability of the then-newly independent parts. As a result, the decree also required the individual pieces of the old Bell system to interconnect with one another as well as with new competitors, stipulating “exchange access on an unbundled, tariffed basis, that is equal in type and quality to that provided for the interexchange telecommunications services of AT&T and its affiliates.”⁶⁵ The court observed that a “variety of approaches” would be required to establish interconnection over AT&T’s vast network and this might take years to accomplish.⁶⁶ The order also required the court to “retain jurisdiction for the purpose of issuing orders to construe or carry out the decree, to modify it, [and] to enforce compliance.”⁶⁷

This interconnection requirement was subsequently revised and enacted into the 1996 Telecommunications Act, compelling the regional firms to interconnect with all other providers “at any technically feasible point within the carrier’s network”⁶⁸ and providing operational quality at least as good as that offered by the primary carrier itself.⁶⁹ While these requirements mimicked those in the consent decree, today they are imposed by the Telecommunications Act.⁷⁰ For the most part, they have become uncontroversial and almost invisible to most users.

In retrospect, the interoperability requirements of the *AT&T* remedy were more significant and much more successful than was the regional breakup. Many of the spun off regional operating systems later merged back together and even with AT&T.⁷¹ In any event, it is not obvious that having multiple regional firms makes the system any more competitive. Firms in different geographic markets ordinarily do not compete much with one another.⁷² Interconnection, however, is another matter. Today much of the

65. *AT&T*, 552 F. Supp. at 196–97, 233.

66. *Id.* at 197.

67. *Id.* at 143.

68. 47 U.S.C. § 251(c)(2)(B) (2018).

69. *Id.* § 251(c)(2)(C).

70. See *Verizon Commc’ns, Inc. v. Law Offs. of Curtis V. Trinko, LLP*, 540 U.S. 398, 413–14 (2004) (declining to find an antitrust violation when local exchange carriers violated Telecommunications Act interconnection obligations).

71. Bell Atlantic, NYNEX, and later GTE formed Verizon; SBC and Pacific Telesis merged in 1997, and SBC and Ameritech in 1999; SBC acquired AT&T; and US WEST was acquired by Qwest in 2000. See Jim Chen, *The Magnificent Seven: American Telephony’s Deregulatory Shootout*, 50 *Hastings L.J.* 1503, 1540–47 (1999); Ken Belson, *SBC Agrees to Acquire AT&T for \$16 Billion*, *N.Y. Times* (Jan. 31, 2005), <https://www.nytimes.com/2005/01/31/business/sbc-agrees-to-acquire-att-for-16-billion.html> (on file with the *Columbia Law Review*); US West, *Telecomms. Hist. Grp.*, <https://www.telcomhistory.org/resources/online-exhibits/telephone-company-histories/us-west/> [<https://perma.cc/3TT9-VPFL>] (last visited Sept. 11, 2022); Bell Atlantic, Verizon, <https://www.verizon.com/about/sites/default/files/bellatlantic/index.html> [<https://perma.cc/ZQL9-6NTJ>] (last visited Sept. 11, 2022).

72. See *Bell Atl. Corp. v. Twombly*, 550 U.S. 544, 567, 570 (2007) (dismissing a complaint alleging that the regional companies did not compete with one another as a result

telephone system is highly competitive even as it is interactive. Users of the system are able to choose their technology, their carrier, and their instruments. The biggest threat comes from permissive merger decisions.⁷³

In other cases, interoperability simply requires firms to share data, operations, or some significant asset. Here the antitrust history is rich.⁷⁴ Recently, in the *Epic Games* antitrust case, the court rejected the plaintiff's requested remedy that would have required Apple to make its platform available to competing app sellers that were not bound by Apple's commissions.⁷⁵

Interoperability decrees may have unintended consequences. First of all, interoperability is a two-way street. Compelling Facebook to provide data portability in a commonly readable format would entail that a user's history and record of postings could be transferable to a different social network. That would make it easier for a Facebook user to carry her built-up history to a rival. In refusing to dismiss the FTC's amended antitrust complaint against Facebook, the court cited this lack of portability as leading to high switching costs, an important barrier to entry.⁷⁶ Portability of this sort can be particularly valuable if users routinely multihome or switch among multiple competing platforms.⁷⁷

of an agreement and noting that the "sparse competition among large firms dominating separate geographical segments of the market" had "an obvious alternative explanation").

73. E.g., *New York v. Deutsche Telekom AG*, 439 F. Supp. 3d 179, 248–49 (S.D.N.Y. 2020) (rejecting a state challenge to the merger of T-Mobile and Sprint).

74. See *United States v. Terminal R.R. Ass'n*, 224 U.S. 383, 411 (1912) (ordering a railroad terminal venture to share its facilities); *Image Tech. Servs. v. Eastman Kodak Co.*, 125 F.3d 1195, 1227 (9th Cir. 1997) (requiring Kodak to sell aftermarket photocopier parts to competing service providers); *New York v. Microsoft Corp.*, 224 F. Supp. 2d 76, 172 (D.D.C. 2002) (requiring Microsoft to disclose information so that non-Windows servers could operate on Windows systems); *United States v. Microsoft Corp.*, 215 F. Supp. 2d 1 (D.D.C. 2002) (consent decree) (approving consent decree that prohibited Microsoft from excluding non-Microsoft browsers from its operating system), *aff'd*, 373 F.3d 1199 (D.C. Cir. 2004); *United States v. Associated Press*, 52 F. Supp. 362, 374–75 (S.D.N.Y. 1943) (requiring AP to remove bylaws that allowed its members to block membership applications, enabling broader news sharing among newspapers), *aff'd*, 326 U.S. 1 (1945); *In re Intel Corp.*, 128 F.T.C. 213, 225–26 (1999) (consent order) (requiring Intel to share technical information with rivals). See generally Spencer Weber Waller, *The Past, Present, and Future of Monopolization Remedies*, 76 *Antitrust L.J.* 11 (2009) (arguing that information and disclosure, access, and interoperability should be key components of future monopolization litigation remedies, citing Microsoft and Intel as examples).

75. See *Epic Games, Inc. v. Apple Inc.*, 559 F. Supp. 3d 898, 1042, 1068 (N.D. Cal. 2021) (refusing to find a monopolization violation and thus rejecting the requested relief that would require Apple to permit multiplatform payment processors), appeal docketed, Nos. 21-16506, 21-16695 (9th Cir. Oct. 14, 2021); see also Complaint for Injunctive Relief at 5, *Epic Games*, 559 F. Supp. 3d 898 (No. 4:20-cv-05640-YGR), 2020 WL 12623035 ("But for Apple's illegal restraints, Epic would provide a competing app store on iOS devices . . .").

76. *Fed. Trade Comm'n v. Facebook, Inc.*, 581 F. Supp. 3d 34, 50–52 (D.D.C. Jan. 11, 2022).

77. See Scott Morton et al., *supra* note 7, at 6–7.

Of course, portability could also make it easier to carry data in the opposite direction—from a rival to Facebook. If Facebook really is a winner-take-all market with significant network advantages, the result of data portability could be to enhance rather than diminish Facebook's power. Whether that will occur is hard to say. One historical analog is phone number portability, which enables phone system subscribers to carry their phone numbers with them when they switch carriers. Number portability became an issue after the AT&T breakup and the rise of wireless carriers because customer choice of carriers became possible. The inability to keep one's own phone number while switching emerged as a significant barrier to switching.⁷⁸

Studies of the effects of such portability have found lower prevailing prices as a result but not the flocking of customers to a single dominant carrier.⁷⁹ Larger carriers, such as Verizon, resisted it.⁸⁰ This suggests that the firms themselves believed that customer flow would more likely benefit smaller carriers.

In any event, antitrust's purpose is not to manage equality among firms, but only to limit anticompetitive restraints. With full data portability ensured, platforms could compete with one another on features in an unrestrained market.

The domain and usefulness of interoperability remedies are determined by considering three issues: (1) whether interoperability is appropriate and for which assets, (2) the extent of network effects, (3) and design and administration.

IV. WHEN IS INTEROPERABILITY THE PREFERRED REMEDY?

Before examining the case for interoperability remedies, the counterarguments should be considered: What are the disadvantages of interoperability rules imposed on firms who did not choose them for

78. See generally Juan Pablo Maicas, Yolanda Polo & F. Javier Sese, Reducing the Level of Switching Costs in Mobile Communications: The Case of Mobile Number Portability, 33 *Telecomms. Pol'y* 544 (2009) (discussing the history of number portability in mobile communications and investigating the "effect of mobile number portability on switching costs").

79. See Minjung Park, The Economic Impact of Wireless Number Portability, 59 *J. Indus. Econ.* 714, 715 (2011) (noting that under portability requirements in the United States, high-volume users switched more readily than low-volume users, bringing lower prices to the former); Dong Hee Shin, A Study of Mobile Number Portability Effects in the United States, 24 *Telematics & Informatics* 1, 12 (2006) (finding stickiness even under portability requirements but not the flocking of users to dominant firms).

80. See Elizabeth Douglass, Carriers Aim to Kill Number Portability, *L.A. Times* (Jan. 16, 2002), <https://www.latimes.com/archives/la-xpm-2002-jan-16-fi-cell16-story.html> (on file with the *Columbia Law Review*); see also Nicole B. Stach, Wireless Local Number Portability and Its Effect on Competition: Can There Be Too Much of a Good Thing?, 12 *CommLaw Conspectus* 223, 238–39 (2004); Stephen M. Kessing, Note, Wireless Local Number Portability: New Rules Will Have Broad Effects, 3 *Duke L. & Tech. Rev.* ¶¶ 9–11 (2004).

themselves? One, of course, is problems of administration. Judicially ordered breakups, at least in the simple story, are a one-and-done transaction that permits the court to oversee the divestiture and walk away without the need for post-enforcement supervision. By contrast, interoperability decrees and statutory remedies may have to be managed.⁸¹

Interoperability remedies are worth considering when a structural breakup will diminish an asset's social value but competition among individual providers is desirable. An interoperability remedy preserves the structure of physical assets but requires competition in their operation or management. Instead of breaking up the asset, we create one of two alternatives. One is a situation in which rivals operate an asset jointly but in a way that incentivizes them to compete rather than collude. The other is to mandate the sharing of data or communications in a way that permits individually owned assets to be integrated into a single network serving the full range of users. The history of both antitrust policy⁸² and IP licensing practices⁸³ provides many instances.

Interoperability remedies are particularly attractive in three interrelated sets of cases. The first occurs when the asset in question is a "winner-take-all" market—either a natural monopoly or at least something that is subject to substantial economies of scale or scope. The second occurs in the closely related situation when the market is subject to significant network effects that give larger networks important advantages over smaller ones and in some cases even make small networks unsustainable. The third can arise when the assets in question are nonrivalrous, such as patents or other IP rights.

Breakups are not a promising remedy when they prevent firms from attaining economies of scale or scope or interfere with positive network effects. They either increase firms' costs, make them significantly less attractive to customers or other users, or a combination of both. To the extent that these outcomes are undesirable, they are also unstable because future competition will either force them to change or else drive them from the market. For example, if output is undifferentiated, a winner-take-all market has an equilibrium of one firm.⁸⁴ If such a market contains two firms, each will be inefficiently small. Further, the larger one will have cost advantages over the smaller one. Such markets move naturally to either collusion or monopoly.

In thinking about breakups, it is also important to distinguish the undoing of mergers from breaking up firms that have developed entirely

81. See *supra* notes 62–67 and accompanying text.

82. See *infra* notes 96–116 and accompanying text.

83. See Bohannon & Hovenkamp, *supra* note 15, at 325–64 (discussing the organization of IP policy under a theory of common management).

84. See Paul L. Joskow, Regulation of Natural Monopoly, *in* 2 *Handbook of Law and Economics* 1227, 1240 (A. Mitchell Polinsky & Steven Shavell eds., 2007).

through internal growth. Superficially, of course, both forms of divestiture are a “breakup,” but the undoing of a merger requires the reseparation of assets that were independent initially and later united. How disruptive this might be depends in significant part on the age of the merger and level of integration. The undoing of a relatively recent acquisition of a separately organized subsidiary need not be all that disruptive. By contrast, reversing a twenty-year-old merger of assets that have been completely integrated into the parent firm may not be that different from the breakup of internally developed assets.

Facebook’s acquisitions of Instagram and WhatsApp are intermediate situations but closer to the former. The acquisitions occurred in 2012 and 2014, eight and six years prior to the 2020 challenge.⁸⁵ However, neither platform has been completely integrated into the parent, and both maintain separate websites, user bases, and a great deal of separate functionality.⁸⁶ Further, they have only limited interoperability even though they are owned by a common parent.⁸⁷ Spinning them off would very likely entail restoring them to an independent owner, as they were prior to the acquisitions. Such a breakup would not be nearly as intrusive as, say, requiring Facebook to spin off video content or Facebook Marketplace. In those cases, a “breakup” would amount to little more than an order forbidding Facebook from offering a particular service.

For IP assets such as patents, interoperability generally takes the form of nonexclusive cross-licensing, often around a common standard. This is an area in which technology and data sharing are common and where antitrust control is well-developed.⁸⁸ Cross-licensing can take advantage of economies of scale as well as network effects.⁸⁹ Two things that make IP rights particularly conducive to interoperability are that (1) they are nonrivalrous, meaning that they can be used an infinite number of times, and there are no capacity constraints; and (2) sharing costs are much lower.

85. See Sam Shead, Facebook Owns the Four Most Downloaded Apps of the Decade, BBC (Dec. 18, 2019), <https://www.bbc.com/news/technology-50838013> [<https://perma.cc/L8ME-85RV>].

86. See Instagram, <https://www.instagram.com> [<https://perma.cc/496Z-U643>] (last visited Sept. 11, 2022); WhatsApp, <https://www.whatsapp.com> [<https://perma.cc/9JXP-2M4P>] (last visited Sept. 11, 2022).

87. See Scott Morton et al., *supra* note 7, at 10–15.

88. See, e.g., DOJ & FTC, Antitrust Enforcement and Intellectual Property Rights: Promoting Innovation and Competition 57–86 (2007), www.usdoj.gov/atr/public/hearings/ip/222655.pdf [<https://perma.cc/B365-YVQ6>]. This document is supplemented by DOJ, USPTO & Nat’l Inst. of Standards & Tech., Draft Policy Statement on Licensing Negotiations and Remedies for Standards-Essential Patents Subject to Voluntary F/RAND Commitments (Dec. 6, 2021), <https://www.justice.gov/atr/page/file/1453471/download> [<https://perma.cc/C4EG-XHXL>]. At this writing, this document is in draft form.

89. See DOJ & FTC, *supra* note 88, at 65 (“Panelists and commentators noted that patent pools can reduce transaction costs [through cross-licensing] for licensees in several ways.”).

It is much easier for multiple firms to share a patent or other IP right than to share a hard asset such as a plant.⁹⁰ As a general rule, production by numerous licensees of the same patent does not need to be coordinated, and price-fixing rules could make that unlawful in any event. This is not true of multiple firms sharing the same plant, pipeline, or other tactile facility. Output coordination in such situations is typically necessary because when the asset is operating at capacity, one firm can increase its own output only by taking it away from rivals. Not so with patents or copyrights.⁹¹

A competitive interoperability remedy must decentralize control over price and output, placing them in the hands of multiple firms but without the likelihood of collusion. Some networks, such as the current phone system, largely satisfy this requirement: Each participant sets the price of its own product although subject to some state rate regulation over intrastate transmissions.⁹² They cannot lawfully agree with one another on the price for either individual products or for access to the network itself.⁹³ Anecdotaly, price-fixing does not appear to be a bigger problem in the telephone network than in markets generally.⁹⁴

For other types of networks, such as the previously discussed interoperability arrangements between Uber and traditional taxicab companies, collusion could be a bigger problem.⁹⁵ Rides are pretty much the only things these firms offer, and there would appear to be little meaningful product differentiation that is discoverable by prospective customers. They compete largely on price, but prices are centrally set.

Some networks are dominated by a single firm, and everyone else is a mere licensee or customer. This can also lead to competition problems. In *Alaska Airlines, Inc. v. United Airlines, Inc.*, the networks were privately operated airline scheduling systems that made reservations for numerous airlines.⁹⁶ American Airlines operated SABRE, the largest system.⁹⁷ United

90. See Bohannon & Hovenkamp, *supra* note 15, at 325–64 (discussing the organization of IP policy under a theory of common management).

91. See *id.*

92. See, e.g., *AT&T Corp. v. Fed. Commc'ns Comm'n*, 967 F.3d 840, 846 (D.C. Cir. 2020) (noting carriers' authority to set their own prices, subject to some oversight).

93. This would be a classic example of price-fixing. See, e.g., Price Fixing, FTC, <https://www.ftc.gov/advice-guidance/competition-guidance/guide-antitrust-laws/dealings-competitors/price-fixing> [<https://perma.cc/UMC9-9QRY>] (last visited Oct. 5, 2022).

94. See, e.g., Org. for Econ. Coop. & Dev., Policy Roundtables: Competition and Regulation Issues in Telecommunications 134 (2001), <https://www.oecd.org/daf/competition/1834399.pdf> [<https://perma.cc/2CMJ-CPPN>] (“The FCA found that even if the market was concentrated, the possibility of collusion was weakened by rapid technological changes, differences in cost structures and financial resources of the network operators as well as increasing demand leading to instability in the market.”).

95. See *supra* notes 22–23 and accompanying text.

96. See 948 F.2d 536, 538 (9th Cir. 1991).

97. *Id.*

Airlines operated Apollo, which was smaller.⁹⁸ While these systems were networks, they were “dominated” networks in the sense that for each of them a single large firm owned the network and made all of the relevant decisions about network access and pricing. No one alleged that the systems set the ticket prices of the airlines themselves, nor that SABRE and Apollo were conspiring with one another.⁹⁹ The other airlines were licensees rather than managing participants.¹⁰⁰

Alaska Airlines and other smaller carriers brought an antitrust action against the systems, claiming self preferencing (discrimination in showing the availability of flights) and exclusion.¹⁰¹ In rejecting that claim, the Ninth Circuit contrasted the case with the Supreme Court’s *United States v. Terminal Railroad Ass’n* decision, noting that the terminal network in that case had been controlled by a collaboration of multiple firms.¹⁰² In the present case, by contrast, SABRE and Apollo were each controlled by a single firm. As a result, the very narrow unilateral refusal to deal standard of § 2 of the Sherman Act applied.¹⁰³

The Supreme Court’s 1912 decision in *Terminal Railroad*, which the *Alaska Airlines* decision distinguished, came in an action brought by the government against a corporation controlled by a group of market participants.¹⁰⁴ These included railroads, bridges across the Mississippi River, and various loading and cargo storage and transfer facilities.¹⁰⁵ The association was a holding company, formed by purchasing the shares or assets of these various entities.¹⁰⁶ The resulting network of facilities was a bottleneck through which East–West traffic at that point of the Mississippi River had to pass. While twenty-four railroads converged on the Mississippi River at St. Louis, none passed across.¹⁰⁷ The association’s intent was apparently to use that network to create a monopoly of traffic passing across the river.¹⁰⁸ Once again, it was carried out by self preferencing the

98. *Id.*

99. See *id.* at 539.

100. See *id.*

101. See *id.*

102. See *id.* at 542 (citing *United States v. Terminal R.R. Ass’n of St. Louis*, 224 U.S. 383 (1912)).

103. See *id.* (citing Phillip Areeda, *Essential Facilities: An Epithet in Need of Limiting Principles*, 58 *Antitrust L.J.* 841, 844–45 (1990)). The court also dismissed as irrelevant antitrust cases requiring dealing in regulated industries. See, e.g., *Otter Tail Power Co. v. United States*, 410 U.S. 366, 395 (1973); *MCI Commc’ns Co. v. AT&T*, 708 F.2d 1081, 1101 (7th Cir. 1983).

104. *Terminal R.R. Ass’n*, 224 U.S. at 390.

105. See *id.* at 392–93.

106. See *id.* at 393–94 (describing the stock and asset transactions).

107. See *id.* at 395.

108. See *id.* at 410–11.

corporation's own assets over those of nonmembers.¹⁰⁹ There was no claim that the member railroads were fixing individual freight rates.¹¹⁰

Having found a violation of both § 1 and § 2 of the Sherman Act,¹¹¹ the Court approved an order requiring the operators of the Association to act as an "impartial agent" for every railroad line that was compelled to use the facilities.¹¹² The defendant was required to approve the admission to the venture "of any existing or future railroad to joint ownership and control of the combined terminal properties" so as to place it "upon a plane of equality" with the original venture participants: If an outsider railroad preferred not to become a member, the defendant association was required to permit it to use the facilities on the same terms.¹¹³ Further, any dispute about participation terms would be referred to the federal district court.¹¹⁴ The Court did not order a breakup of the company but did hold that if the parties were unable to come to agreements in accordance with the decree the Court would reconsider.¹¹⁵

In contrast to the *Terminal Railroad* case, the *Alaska Airlines* decision gave us the worst of two worlds. First, as networks of multiple airlines, the reservation systems had whatever market power an aggregation of providers might acquire. For many networks this could be the entire market. Second, because the networks were controlled by a single firm, prices and terms were set unilaterally and thus were not reachable under the more aggressive provisions of § 1 of the Sherman Act.

By holding up *Terminal Railroad* as a counterexample, the Court was in fact making an important suggestion about remedies: Networks of active market participants can be made to operate more competitively if decisionmaking power is distributed over all or at least a significant subset of participants. A well-designed interoperability remedy will enable a

109. See *id.*

110. An earlier state corporate law quo warranto proceeding against the Association had failed. That opinion noted that the Association set bridge tolls and handling charges for river crossings but did not mention individual railroad rates. See *State ex inf. Att'y Gen. v. Terminal Ass'n of St. Louis*, 81 S.W. 395, 402 (Mo. 1904).

111. See *Terminal R.R. Ass'n*, 224 U.S. at 409 (observing that the Association had been challenged as a "combination[] in restraint of interstate commerce" and finding that it "constitutes a contract . . . among the states, and an attempt to monopolize").

112. *Id.* at 410.

113. *Id.* at 411–12.

114. *Id.* The Court stated:

By providing that any disagreement between any company applying to become a joint owner or user, as herein provided for, and the terminal or proprietary companies, which shall arise after a final decree in this cause, may be submitted to the district court, upon a petition filed in this cause, subject to review by appeal in the usual manner.

Id.

115. *Id.* at 412.

market to take full advantage of the economies that a particular asset's size and shape provide, while yet inducing competition within the network. SABRE could just as easily have been organized as a cooperative venture among the participating airlines. In that case, as in *Terminal Railroad*, it would have been subject to an interoperability order.

Costs that decline as output increases often serve to make breakups undesirable. Once the firm is broken into two or more pieces, each piece will have higher costs. Further, if these economies of scale are substantial, the resulting breakup will not be stable. Eventually one firm will come to dominate over the others and the market will once again return to monopoly status, perhaps through bankruptcy, perhaps by merger, or perhaps by collusion.¹¹⁶

To illustrate, suppose that a firm's costs decline as output decreases up to the point that it produces 100 units at a cost of \$1. For any smaller output, costs would be proportionately higher. Further, total market demand at a price of \$1 or a little higher is 90 units. That indicates that this firm is a natural monopoly, or that the market is a winner-take-all market. Left to its own choices it would maximize its profits by reducing output to some lower level, say, 70 units, and charging a higher price, say, \$1.60. If a structural antitrust decree broke this firm into two halves, however, its costs would be significantly higher. The firm's post-breakup "competitive" price might very well be higher and output lower than its pre-breakup "monopoly" price. In that case, not only will consumers and input suppliers such as labor be harmed, but the situation will not be sustainable in the long run.

Suppose, however, that this particular asset could be shared among several firms who could aggregate its scale economies by operating it jointly. That is, the system would retain its dominant structure but be operated competitively by a large number of firms. If these firms behaved competitively, they would share this facility and compete all the way up to the point that the plant's capacity was exhausted or the market saturated. Indeed, that structure could yield the optimal regulatory goal of performance that mimics a competitive market but in the context of a monopoly, networked asset.

This structure would be preferable to the one that economist Harold Demsetz famously proposed, which was that multiple firms bid against each other for *exclusive but successive* rights to operate a natural monopoly utility.¹¹⁷ In Demsetz's model, a single winning bidder won the right to operate the

116. See Joskow, *supra* note 84, at 1238–40 (noting that most outcomes following breakups of natural monopolies lead to either equilibrium of one firm or else of an even less desirable oligopoly equilibrium).

117. Harold Demsetz, *Why Regulate Utilities?*, 11 *J.L. & Econ.* 55, 56–58 (1968) (advancing a theory that with enough bidders, even a natural monopoly product such as a utility would be bid at a price point that "will differ insignificantly from the per-unit cost").

utility by bidding the most competitive price. The practical problems in implementing such an approach are difficult to say the least and may be insurmountable if the natural monopoly asset is a substantial and specialized facility.¹¹⁸ By contrast, under the interoperability approach a number of firms operate the asset jointly, and the antitrust laws govern their pricing and output selection behavior, as in the phone system. Whether such an outcome is realistically available needs to be determined, but it very likely could be generated much more frequently than it is currently.

One important underlying principle is that economies of scale, or the extreme situation of winner-take-all status, are things that attach to productive *assets*, not to firms as such. Railroad mountain passes or bridges can be bottlenecks, but not railroad companies. Further, passes and bridges are often assets that can be shared, and IP rights even more frequently. Economies or network effects might very well dictate that a market contain a single network—the asset—but that need not imply that a single firm must operate it.

V. NETWORK EFFECTS

Network effects occur when important economies attach to consumption rather than production. The network is more valuable as it has more users. If a network is subject to “indirect” network effects as well, it becomes more valuable to one side as it has more participants on the other side, and vice versa. For example, Uber becomes more valuable as it has more drivers providing rides, but it will obtain more drivers by having more passengers. Growth on the two sides is mutually supporting and gives a larger network a distinct advantage over a smaller one competing in the same market. In the absence of product differentiation, the successful network is likely to take over the entire market.

The gold standard in market-dominating networks is the global telephone system in which nearly everyone can talk to nearly everyone else. Any “breakup” that created two or more networks such that members of one network could not communicate with members of the other would be much less valuable. It would also be unstable, until people inevitably developed workarounds. In such cases simply breaking up the network can pose debilitating social costs, perhaps even making the network nonviable. In sum, what the telephone system needed for effective competition was multiple firms acting as decisionmakers, not multiple networks, and very likely not Demsetz’s idea that multiple firms should bid against one another for sole, successive control of the network. Interoperability among

118. See Oliver E. Williamson, Franchise Bidding for Natural Monopolies—In General and With Respect to CATV, 7 *Bell J. Econ.* 73, 77–79, 85–98 (1976) (finding severe problems implementing Demsetz’s theory on installed cable television systems).

multiple competing providers was the genius of the antitrust consent decree that restructured the telephone industry.

Digital networks can often be shared in ways that brick-and-mortar plants and stores cannot because the digital conduits leave room for much greater operational flexibility than is possible with other physical assets. Once again, the telephone network offers an example where literally thousands of firms can participate, offering telecommunications services of various sorts, devices, and collateral services but all on an interconnected network. The network itself consists of both wired and wireless connections. So the real question is whether the experience of the telephone network can be duplicated in other settings. The answer is maybe and perhaps often.

Often the historical development of a network explains why it is dominant or collaborative. The original telephone system emanated from a single dominant firm, AT&T.¹¹⁹ By contrast, the Chicago Board of Trade, which was a marketing commons,¹²⁰ and the Associated Press, a news-sharing wire service of newspapers,¹²¹ were structured from the beginning as collaborations of multiple firms. In general, if a market has a dominant firm at the time of a network's formation, that firm will prefer a dominated network, as AT&T did prior to the breakup.¹²² If it does not, then the network that emerges is more likely to be collaborative.¹²³ For example, the Windows operating system that emerged as dominant within Intel-based small computer systems was controlled by a single firm.¹²⁴ The government's antitrust case was provoked by Microsoft's efforts to exclude an unruly web browser, Netscape.¹²⁵ It threatened to "commoditize" the operating system by making the browser compatible across multiple platforms.¹²⁶

119. On the history of the AT&T system and how it related to its competitors and other networks, see Richard R. John, *Network Nation: Inventing American Telecommunications* 200–69, 414–24 (2010).

120. See *Chi. Bd. of Trade v. United States*, 246 U.S. 231, 241 (1918) (upholding as reasonable a price agreement among the trading members of an incorporated market in grains and agricultural products).

121. See *Associated Press v. United States*, 326 U.S. 1, 22–24 (1945) (striking down a discriminatory membership rule imposed by an association of newspapers formed to facilitate wire service news sharing); see also *supra* notes 41–44 and accompanying text.

122. Kearney, *supra* note 20, at 1403 n.18.

123. See Chander Velu, *Evolutionary or Revolutionary Business Model Innovation Through Coopetition? The Role of Dominance in Network Markets*, 53 *Indus. Mktg. Mgmt.* 124, 124–26 (2016) (“Studies have shown that the likelihood of coopetition among incumbent firms increases with market concentration and greater customer penetration, and diminishes with time.”).

124. *United States v. Microsoft Corp.*, No. CIV. A. 92–1232, 1998 WL 614485, at *3 (D.D.C. Sept. 14, 1998).

125. *Id.* at *20.

126. See *id.* at *1, *29 (denying all but one of Microsoft's claims in its motion for summary judgment on federal antitrust claims); *id.* at *4 (describing Bill Gates's fear that the Netscape–

By contrast, email is just as networked, but it emerged as a collaborative network whose interconnectivity rivals that of the telephone system.¹²⁷ Although there are hundreds of email clients, or providers, all of them operate on a system under which anyone who owns an address provided by one client can readily communicate with those using a different client.¹²⁸ A system in which users of, say, Outlook could communicate only with other users of Outlook would certainly be untenable.

VI. DESIGN OF INTEROPERABILITY RULES

Whether the process is legislative or judicial, the first step in fashioning an interoperability remedy is determining appropriateness and type. “Winner-take-all” status is not necessarily the driving factor. Most assets, including most digital platforms, are not winner-take-all. Competition among these is feasible without mandated interoperability. If significant product differentiation is possible, even large networks can be susceptible to competitive entry. The exceptions are products such as search engines, where effective differentiation has proven difficult to achieve.¹²⁹ In all events, interoperability should never be compelled among competing nondominant firms without a clearly proven benefit.

A second requirement is dominance of the particular asset for which interoperability is sought. Market power attaches to products, not to firms. If a product or service can be efficiently distributed without interoperability—as is true of most traditional products—then compelled interoperability becomes a recipe for homogenization and free riding.

A. *Product Differentiation and Excessive Interoperability*

Interoperability is not always a good remedy. It may limit product differentiation, even to the extent of homogenizing everyone into a single firm. This phenomenon very likely limited the value of interoperability in markets for clearing securities. Several smaller houses simply blended into

Java combination threatened to “commoditize” the operating system). The monopolization claims were resolved by the court of appeals in *United States v. Microsoft Corp.*, 253 F.3d 34, 46 (D.C. Cir. 2001).

127. John Palfrey & Urs Gasser, *Interoperability in Information Systems in the Furtherance of Trade 5* (The Berkman Ctr. for Internet & Soc’y at Harv. Univ., NCCR Trade Regul. Rsch. Paper Series Working Paper No. 2012/26, 2012), <https://ssrn.com/abstract=2192651> [<https://perma.cc/C99W-6PU3>] (“[T]hose who created the e-mail system did so in such a manner as to ensure cooperation and collaboration among technologists.”).

128. *Id.* (“Information systems . . . have been designed to make sure that the users of the email system do not need to worry about who made the email client or the email server being used by a business correspondent, whether down the hall or across the world.”).

129. See Hovenkamp, *Platform Monopoly*, *supra* note 6, at 1998–99.

one big one.¹³⁰ It did not occur, however, when the law began to demand phone number portability among networked phone companies.¹³¹

The reason is that phone number assignment is only one of many features that phone carriers provide. They continue to compete on plans, prices, and instruments, which can be quite differentiated. The message here is the same one that applies to regulatory intervention generally: It must be limited to those assets where it is required and likely to be beneficial, letting competition work in the balance. In some markets, such as securities clearinghouses or search engines, that may be difficult to achieve. Whether and to what extent is an empirical question. Although it has not been tried, one can imagine that the result of compelling full data sharing in the search engine market might be that everyone will flock to Google Search, even more than they do today. On the other hand, if search engine content or process can be differentiated in a meaningful way, we might see greater search engine competition emerge. Until this has been resolved, the best antitrust advice is to go slow, looking for other remedies such as the removal of defaults that favor Google Search.¹³²

At this writing, the impact of aggregation in ride-hailing services, such as the previously discussed arrangement between Uber and traditional cabs, is still to be determined.¹³³ Ridesharing is not like network interconnection and phone number portability, which are only a small portion of the activities of communications firms on the phone network. They continue to market subscriber services and sales of instruments separately. To the extent taxi services cannot readily be differentiated in a way that is meaningful to consumers, the eventual consequence may be that everyone flocks to a single app, and thus the same network. Then monopoly pricing could be a threat.

The extent of product differentiation determines both the need and appropriate scope of any interoperability decree. Significant differentiation is an important reason why many two-sided digital platforms are not winner-take-all markets. Unless the market contains a dominant firm, competition in differentiated markets will not typically

130. See Dan Awrey & Joshua Macey, *Open Access, Interoperability, the DTCC's Unexpected Path to Monopoly* 45–55 (Cornell L. Sch., Legal Stud. Rsch. Paper Series Working Paper No. 21-20, 2021), <https://ssrn.com/abstract=3885194> [<https://perma.cc/9FAM-Q44N>].

131. See *supra* notes 78–80 and accompanying text.

132. On Apple and Android defaults that favor Google Search, see Hovenkamp, *Platform Monopoly*, *supra* note 6, at 1977, 1980, 1999–2000. But see Tobias J. Klein, Madina Kurmangaliyeva, Jens Prüfer & Patricia Prüfer, *How Important Are User-Generated Data for Search Result Quality? Experimental Evidence* 6 (Sept. 22, 2022) (unpublished manuscript), <https://ssrn.com/abstract=4229292> [<https://perma.cc/7RW8-EMH8>] (arguing that data sharing could improve functionality of even small search engines, at least for uncommon queries).

133. See *supra* text accompanying notes 48–51.

benefit from an interoperability decree and may in fact be harmed. To illustrate, the United States has hundreds of dating sites and thousands of internet-based subscription periodicals.¹³⁴ Most operate on two-sided platform networks.¹³⁵ Internally, these sites experience positive network effects that give advantages to larger size on both the subscriber side and the advertiser side.¹³⁶ They also enjoy indirect network effects, in that each side is more valuable as the number of users on the other side increases.¹³⁷ They typically compete on price and product variety. Each dating site or magazine offers a distinctive variation.¹³⁸ For example, among subscription magazines, *Cosmopolitan* (2.16 million subscribers)¹³⁹ and *Parents* (2.08 million subscribers)¹⁴⁰ are roughly of equal size and operate on digital platforms.¹⁴¹ It is not obvious that an interoperability decree among them would create any benefits. To be sure, joint arrangements for billing or customer processing might be advantageous, but, if so, these could emerge through voluntary choice.

The same thing is true of social networking products, including Facebook, Instagram, LinkedIn, Reddit, Snapchat, TikTok, Twitter, and others. While all of these benefit from network externalities and thus larger size, they are significantly different from one another and appeal to different although overlapping audiences. The fact that many of them are free for users serves only to enhance the extent of nonprice competition. Size certainly confers network advantages but in sufficiently differentiated markets there is almost always room for unique alternatives.

B. *New Entry and Lack of Dominance*

Broad and mandated interoperability is not always the best remedy, even for digital two-sided platforms. For example, product variety and robust ongoing entry¹⁴² suggest that competition is working quite well in the market

134. For example, Zinio, a seller of digital magazines, lists more than 6,000 digital magazines published worldwide. See Zinio, <https://www.zinio.com> [<https://perma.cc/XB86-LBGP>] (last visited Sept. 29, 2022).

135. Hovenkamp, Platform Monopoly, *supra* note 6, at 1996.

136. *Id.*

137. *Id.*

138. See *id.* at 1997–98.

139. *Cosmopolitan*, <https://www.cosmopolitan.com/> [<https://perma.cc/QB2A-NLDF>] (last visited Sept. 29, 2022).

140. *Parents*, <https://parents.com> [<https://perma.cc/HX3L-A6FT>] (last visited Sept. 29, 2022).

141. William Turvill, America's Top 50 Magazines: Time and TV Guide Among Best Performing Titles in Second Half of 2021, *Press Gazette* (Apr. 8, 2022), <https://pressgazette.co.uk/top-50-most-popular-magazines-in-america/> [<https://perma.cc/YR54-4RZ4>].

142. Almost sixty new magazines entered the U.S. market in 2020. See Amy Watson, Number of Magazines Launched in the U.S. in 2020, by Category, *Statista* (Sept. 20, 2021),

for magazines sold on digital platforms. By contrast, the social networking market probably contains a dominant firm.¹⁴³ Given that the market is highly differentiated, Facebook is very likely not a natural monopoly.

Facebook's history of exclusionary practices confirms this. A winner-take-all network would not need exclusionary practices to maintain its position. Once it had attained a dominant position, it could retain that position by simply operating efficiently without significant missteps. Its advantages in structure and membership size would be enough to exclude competing firms. In that case, the only antitrust violation likely to apply would be the essential facilities doctrine or a related rule governing unilateral refusals to deal.¹⁴⁴ Compelled interoperability could be an effective remedy, but it must be legislated, or else duty-to-deal doctrine would have to be expanded.

Networks that are not winner-take-all are likely to require exclusionary practices to retain dominance. That makes the search for violations easier. Facebook's motive for acquiring Instagram illustrates the problem. Given how differentiated the two sites are, Facebook very likely could not keep Instagram out of the market simply by offering its own services on attractive but sustainable terms.¹⁴⁵ The acquisition makes a merger remedy appropriate.

When a market does contain a dominant firm, interoperability as an antitrust remedy can be a way to undo the effects of exclusionary practices and improve competition, even among differentiated firms. It is intended to restore competition, which is generally a central goal of an antitrust equity remedy.¹⁴⁶

Here, an interoperability decree should be limited to the assets where sharing is likely to improve competition. These limitations are hardly novel. For example, the railroads in the *Terminal Railroad* decision did not need to consolidate all of their business.¹⁴⁷ But all required access to the

<https://www.statista.com/statistics/238598/magazine-launches-in-the-united-states-by-category/> [<https://perma.cc/7HH6-54TM>].

143. See *Fed. Trade Comm'n v. Facebook, Inc.*, 581 F. Supp. 3d 34, 46 (D.D.C. Jan. 11, 2022) (denying a motion to dismiss a complaint alleging that Facebook—whose market share of daily average users exceeded eighty percent—was a Sherman Act monopolist).

144. See Phillip E. Areeda & Herbert Hovenkamp, *Antitrust Law: An Analysis of Antitrust Principles and Their Application* §§ 770–774 (5th ed. 2022) (treating essential facilities and related doctrines governing unilateral refusals to deal).

145. The district court sustained the complaint on this issue. See *Facebook*, 581 F. Supp. at 52–54.

146. See, e.g., *Rambus, Inc. v. Fed. Trade Comm'n*, 522 F.3d 456, 462 (D.C. Cir. 2008) (observing that a remedy extending beyond an injunction required “stronger proof” that it was necessary to “restore competitive conditions”); *United States v. Microsoft Corp.*, 253 F.3d 34, 47 (D.C. Cir. 2001) (noting that the government requested a remedy of any “preliminary and permanent relief” that would be “necessary and appropriate to restore competitive conditions” (internal quotation marks omitted) (quoting *Complaint* at 53, *United States v. Microsoft Corp.*, 97 F. Supp. 2d 59 (D.D.C. 2000) (No. 1:98CV01232))).

147. See *supra* notes 104–115 and accompanying text.

bridges and loading facilities at the Mississippi River.¹⁴⁸ The same thing was true of the telephone system, which needed interconnection and number portability but not complete consolidation of products and service offerings.¹⁴⁹ One serious and debilitating problem with the American Innovation and Choice Online Act (AICO) discussed below is that it appears to compel interoperability without requiring that the asset in question be monopolized and without being limited to situations where interoperability would improve performance.¹⁵⁰

“Dynamic” interoperability, or ongoing sharing of data and functional information, is likely to be an unwieldy solution to a monopoly problem such as the one presented by Facebook. Making data fully interactive in real time can be technically difficult given that these sites use different types of data and use it in different ways. That is fundamentally an engineering question. Further, excessive interoperability could result in everyone flocking to Facebook, the largest and thus the most attractive platform. The antitrust task is to produce interoperability where it will effectively increase competition while letting firms retain their distinctive character.

In such cases, “static” interoperability, or portability, is more promising than making the firms completely interactive. In its opinion sustaining the FTC’s monopolization complaint against Facebook, the United States District Court for the District of Columbia cited lack of data portability as a barrier to entry, which it clearly is.¹⁵¹ As a Facebook user builds up an inventory of messages, photos, videos, contacts, and other content, the cost of switching to a different provider becomes higher. One way to remedy this problem is to require Facebook to maintain this data in an accessible format, comprising a package that could be claimed by its owner and transferred to other firms who have set themselves up to take advantage of it. Without a locked-in membership, Facebook could be forced to compete more aggressively to hold users’ attention. Such a remedy should begin with the premise that users should have the power to access and transfer their own data. At the same time, portability without real-time interoperability would enable the platforms to retain their distinctive characteristics.

148. See *supra* notes 104–110 and accompanying text.

149. See *supra* notes 78–80 and accompanying text.

150. See *infra* notes 152–160 and accompanying text.

151. See *Fed. Trade Comm’n v. Facebook, Inc.*, 581 F. Supp. 3d 34, 51–52 (D.D.C. Jan. 11, 2022) (summarizing the amended complaint as alleging that Facebook executives sought to raise users’ “switching costs” by making data—such as photos—more concentrated and less portable).

C. *American Innovation and Choice Online Act*

The interoperability requirements contained in the currently proposed AICO are both too broad and too narrow, making them almost certain to be damaging.¹⁵² The bill gives anyone the right to “access or interoperate” with a “covered platform,” which is defined by the overall size of the firm, without regard to the particular product for which interoperability is deemed necessary. The range of covered firms is underinclusive, while the range of covered products is seriously overinclusive. The bill would require interoperability for nearly any feature, product, or service offered by a covered platform. Possibly avoiding the worst excesses, the proposed bill creates an affirmative defense with the burden on the defendant to show “that the conduct has not resulted in and would not result in material harm to competition.”¹⁵³

The bill ignores a fundamental principle, which is that market power attaches to *products*, not to firms. The competitive effects of an obligation to interoperate depends on the relative degree of control that a seller has of that product. For example, assuming that compelled interoperability makes sense for Google Search—whose market share exceeds 92%¹⁵⁴—what sense does it make for Microsoft Bing? Although Microsoft is a bigger company, its search market share is roughly 3%.¹⁵⁵ For internet browsers, Google’s Chrome has about a 66% market share, whereas Microsoft’s Edge and Apple’s Safari have about 10% each.¹⁵⁶

152. See generally American Innovation and Choice Online Act, S. 2992, 117th Cong. § 3 (as reported by S. Comm. on the Judiciary, Mar. 2, 2022) (detailing AICO’s interoperability requirements).

153. The bill also acknowledges an exception for situations where such restrictions would be “necessary . . . for the security or functioning of the covered platform; or . . . to prevent data from the covered platform operator or another business user from being transferred to the Government of the People’s Republic of China or the government of another foreign adversary” and is subject to an affirmative defense that:

[T]he conduct . . . was narrowly tailored, could not be achieved through less discriminatory means, was nonpretextual, and was reasonably necessary to . . . prevent a violation of, or comply with, Federal or State law[.] . . . protect safety, user privacy, the security of non-public data, or the security of the covered platform; or . . . maintain or substantially enhance the core functionality of the covered platform.

Id.

154. Search Engine Market Share Worldwide, Statcounter Glob. Stats, <https://gs.statcounter.com/search-engine-market-share> [<https://perma.cc/L8UC-UNZM>] (last visited Sept. 11, 2022) (showing search engine market shares as of August 2022).

155. Id.

156. Desktop Browser Market Share Worldwide, Statcounter Glob. Stats, <https://gs.statcounter.com/browser-market-share/desktop/worldwide> [<https://perma.cc/GFB2-CZ4V>] (last visited Sept. 11, 2022) (showing desktop browser market shares as of August 2022).

The flip side is also true. Sometimes firms that are not covered platforms have greater product dominance. For example, should Amazon, a covered platform, be required to engage in nondiscriminatory streaming of any film whose owner wants it streamed? Amazon is a smaller streamer than Netflix,¹⁵⁷ but Netflix is not a covered platform under the Act and would not be so obligated.¹⁵⁸

The bill ignores not only market power requirements for particular products but also other attributes of power. For example, neither search engines nor internet browsers are “sticky”: Users can switch to a different one on a whim, but because the statute is indifferent to particular products, that fact is irrelevant. Interoperability decrees are necessary when users are unable to avoid certain products, such as the railroad bridges in the *Terminal Railroad case*,¹⁵⁹ but that hardly applies to products such as search engines.

The story is different for desktop operating systems, where Microsoft Windows controls the dominant market share (about 75%), Apple controls about 15%, and ChromeOS controls under 2%.¹⁶⁰ Operating systems are stickier, however. For example, a Dell computer user running Windows cannot instantly change to Apple’s MacOS. In such cases interoperability makes more sense, provided that the firm has a significant market share in that product.

Interoperability can be a suitable remedy for addressing competition problems on a network dominated by a single firm, such as pre-breakup AT&T or Microsoft. Nevertheless, there must still be a dominated asset. People wishing to use a phone could not easily avoid AT&T, and those running Intel-based computers could not easily avoid Windows. Unless competitive harm is taken seriously, this bill will facilitate large-scale free riding by firms that are readily capable of producing and distributing their own goods and services.

157. See David Curry, Video Streaming App Revenue and Usage Statistics (2022), Bus. of Apps (July 20, 2022), <https://www.businessofapps.com/data/video-streaming-app-market/> [https://perma.cc/6DN4-QVXY] (“The two free platforms, YouTube and TikTok, lead the pack in total usage. Netflix has the most usage out of any of the premium platforms, with Amazon Prime Video in fourth place.”).

158. While the bill gives a covered platform an exemption “solely for offering” a subscription service, that only applies to discrimination between those who purchase the service and those who do not; it does not apply to preferencing within the subscription service. American Innovation and Choice Online Act, S. 2992, 117th Cong. § 3 (as reported by S. Comm. on the Judiciary, Mar. 2, 2022).

159. See *supra* notes 102–115 and accompanying text.

160. Desktop Operating System Market Share Worldwide—August 2022, Statcounter Glob. Stats, <https://gs.statcounter.com/os-market-share/desktop/worldwide> [https://perma.cc/3L6J-3Z4P] (last visited Sept. 9, 2022).

D. *Managerial Interoperability at the Firm Level*

A firm may be so dominant in all, or virtually all, of its products that interoperability is called for at the firm level rather than for a particular product. Whether that is true for Amazon is doubtful. While it is a big internet retailer, it is hardly the only one, and it has nondominant market shares in most of the products that it sells. Further, what does interoperability at the firm level entail? Should Amazon have an obligation to sell everybody's stuff, ranking it in a nondiscriminatory fashion? To illustrate, the United States has 196 suppliers of common kitchen cutting boards, not including foreign imports.¹⁶¹ If Amazon wants to sell any, must it sell everyone's? That would effectively turn it into a common carrier.

Here, more thought should be given to assigning competitive sharing duties at the managerial level. Competitive production results when multiple sellers each operate their own facility, but it can also be organized by permitting multiple sellers to operate on a common facility, sharing as many features as is practical and mutually beneficial.

Coase once observed that the market's price mechanism is costly to use, and other organizational alternatives can sometimes get the job done more cheaply.¹⁶² One problem of organizing the production of multiple sellers on a single platform is the danger that they will collude. That is, Coase's "joint maximizing" solution can be a cartel or monopoly.¹⁶³ But if that problem can be managed, then facilities whose managers are competing firms can attain all of the benefits of organized production. Good examples are the Chicago Board of Trade and the Associated Press.¹⁶⁴ The sellers on the Chicago Board of Trade are independent firms, but they function by sharing the platform and competing with one another on price as well as other terms where competition is customary.¹⁶⁵ The policy trick is to enable structures that permit the members to reduce the joint costs of operating a market without creating an unacceptable risk of collusion. If Amazon's product selection and distribution was governed by such a board, it would not have a duty to sell everyone's stuff, but it would be obligated not to make anticompetitive choices, with the obligation policed by § 1 of the Sherman Act.

161. Cutting Boards Suppliers, Thomas, <https://www.thomasnet.com/products/cutting-boards-5902002-1.html> [<https://perma.cc/D6TW-HFNB>] (last visited Sept. 10, 2022).

162. See Coase, *supra* note 17, at 35.

163. See Erik Hovenkamp, Competition, Inalienability, and the Economic Analysis of Patent Law, 21 *Stan. Tech. L. Rev.* 33, 61–62 (2018) (noting competition policy may limit the ability of firms to achieve a joint maximizing solution).

164. See *supra* notes 120–123 and accompanying text.

165. On the Chicago Board of Trade as well as similar institutions such as the New York Stock Exchange, see J. Harold Mulherin, Jeffrey M. Netter & James A. Overdahl, Prices Are Property: The Organization of Financial Exchanges From a Transaction Cost Perspective, 34 *J.L. & Econ.* 591, 630–31 (1991).

Much of what Amazon sells are nondigital tactile products. Further, it has evolved into what is effectively a multiseller marketplace. Its proportion of third-party sales has risen dramatically and now constitutes more than fifty-five percent of its business.¹⁶⁶ Nevertheless, for antitrust purposes, Amazon is treated as a single entity. That is, its situation resembles the major airlines in the computer reservation system decision described previously,¹⁶⁷ rather than the one in *Terminal Railroad*¹⁶⁸ or *Associated Press*.¹⁶⁹ Amazon operates as the managing licensor, while the independent merchants are licensees.

The multifirm operating structures in the *Chicago Board*, *Terminal Railroad*, and *Associated Press* cases had been created voluntarily by the parties prior to the government's suit. This structure could also be replicated by a judicial decree, should a suitable antitrust violation be found. Rather than divesting assets, the court could decentralize management. This would require an operational structure in which effective decisionmaking about product selection, pricing, and other terms was made by a collaboration of market participants rather than Amazon itself. That could enable Amazon to preserve the advantage that its large platform size gives it, while facilitating internal competition. It would not require a breakup but rather a transfer of decisionmaking authority over product selection and other practices to a board of individual participants in the Amazon marketplace.¹⁷⁰ Each firm should be permitted to set its own price.

Treating Amazon's conduct as collaborative rather than unilateral would discipline anticompetitive practices without getting courts excessively involved in Amazon's product selection and display processes. Further, an agreement among multiple competing firms to engage in a restraint such as a most-favored-nation clause would get much harsher treatment than would purely vertical agreements.¹⁷¹ In sum, one advantage of this approach is that it would permit antitrust to reach even nondominant market shares, provided there was an agreement in restraint of trade.

166. See Daniela Coppola, Share of Paid Units Sold by Third-Party Sellers on Amazon Platform From Second Quarter 2007 to Second Quarter 2022, Statista (Aug. 3, 2021), <https://www.statista.com/statistics/259782/third-party-seller-share-of-amazon-platform/> [<https://perma.cc/6B72-PLQL>] (showing the increase of paid units sold by third parties on Amazon rising to fifty-seven percent in the fourth quarter of 2021).

167. See supra notes 96–100 and accompanying text.

168. See supra notes 102–110 and accompanying text.

169. See supra notes 41–44 and accompanying text.

170. The mechanics are developed in Hovenkamp, Platform Monopoly, supra note 6, at 2021–31.

171. See id. at 1959–60, 1960 n.23 (noting “[v]ertical restraints often pose no risk to competition” but could include types of exclusionary vertical agreements like most-favored-nation clauses).

E. *Interoperability and Mergers*

Mergers can operate as an extreme alternative to interoperability by bringing the assets in question under the control of a single firm.¹⁷² In the process, however, they threaten the use of interoperability to increase competition. For example, rather than interoperate with Instagram, Facebook acquires it.

Merger policy today has become focused mainly on collusion or collusion-like behavior rather than exclusion. The fear is that the merger will lead to either a market-wide price increase¹⁷³ or else a “unilateral” price increase imposed by the merging firms.¹⁷⁴ Platform acquisitions of upstart rivals also need to be addressed as exclusionary practices, designed to prevent new competition from emerging.¹⁷⁵ The FTC’s complaint against Facebook’s acquisition of Instagram makes clear that the FTC has gotten this message. At the time of that acquisition, Facebook was obsessed with the possibilities that Instagram would turn into a significant rival—a likely indicator that Facebook is *not* a winner-take-all platform.¹⁷⁶ But the Instagram case is obvious in hindsight, given that Instagram grew from about thirty million users and a “handful” of employees at the time of acquisition to about one billion users today.¹⁷⁷

172. On “interoperability” within a single firm, see *supra* notes 22–32 and accompanying text.

173. See DOJ & FTC, Horizontal Merger Guidelines § 7 (2010), <https://www.justice.gov/sites/default/files/atr/legacy/2010/08/19/hmg-2010.pdf> [<https://perma.cc/C77V-BXV8>] [hereinafter Horizontal Merger Guidelines] (noting that a merger can lead to coordinated interaction among firms, enhancing “a firm’s incentive to raise prices, by assuaging the fear that such a move would lose customers to rivals”); Areeda & Hovenkamp, *supra* note 144, §§ 916–919.

174. See Horizontal Merger Guidelines, *supra* note 173, § 6.1 (“A merger between firms selling differentiated products may diminish competition by enabling the merged firm to profit by unilaterally raising the price of one or both products above the pre-merger level.”); Areeda & Hovenkamp, *supra* note 144, §§ 911–914 (“[A] merger in a product-differentiated market might facilitate a unilateral price increase . . .”).

175. On this point, see Susan Athey & Fiona Scott Morton, Platform Annexation 2 (2021), <https://ssrn.com/abstract=3786434> [<https://perma.cc/RM9C-WNNT>] (noting that acquisitions of platforms must be addressed as creating competition concerns).

176. See First Amended Complaint ¶¶ 1, 7, 64, Fed. Trade Comm’n v. Facebook, Inc., 581 F. Supp. 3d 34 (D.D.C. 2022) (No. 1:20-cv-3590-CRC) (highlighting a strategy of preferring the acquisition of rivals); *id.* ¶¶ 66, 72 (noting specifically the acquisition strategy vis-à-vis Instagram); *id.* ¶¶ 82–84, 88–90 (discussing Mark Zuckerberg’s anxiety about Instagram’s rapid growth); *id.* ¶ 86 (noting the acquisition was in part motivated by fear that Apple might otherwise acquire Instagram).

177. See Brian Dean, Instagram Demographic Statistics: How Many People Use Instagram in 2022?, Backlink, <https://backlinko.com/instagram-users> [<https://perma.cc/RPU2-QMAQ>] (last visited Sept. 11, 2022) (recording an early 2022 estimate of one billion users); Evelyn M. Rusli, Facebook Buys Instagram for \$1 Billion, N.Y. Times: Dealbook (Apr. 9, 2012), <https://dealbook.nytimes.com/2012/04/09/facebook-buys-instagram-for-1-billion/> (on file with the *Columbia Law Review*).

Many firms acquired by large digital platforms today were very small at the time of acquisition. Systematic acquisitions entail, however, that they will never emerge as rivals of the acquiring firm.¹⁷⁸ If so, interoperability without merger is an avenue worth considering. For example, where significant IP rights are at issue, firms should be restricted to a license of nonexclusive rights or else be required to give a compulsory license.¹⁷⁹ In such cases the nonexclusive license can operate as a form of interoperability.

The important difference between an interoperability arrangement and a merger is that the former can be extended to all relevant market participants. A nonexclusive license operates as a form of interoperability, permitting multiple firms to use the same assets without colluding. By contrast, the merger is both over- and underinclusive. Its interoperability is limited to the merging pair, but it extends to all of those firms' assets, even those for which interoperability is unnecessary. For example, it eliminates all competition, both price and nonprice, between the merging firms.

An interoperability decree may sometimes be necessary as part of the remedy for an unlawful merger. Spun off assets must be viable or the spin-off will not restore competition. In AT&T's situation, for example, it is hard to see how the individual operating companies could have survived without interconnection. If Facebook should be ordered to spin off Instagram, as the FTC is currently requesting,¹⁸⁰ data portability between the two could give Instagram a better chance at competing. In fact, remedies involving IP sharing are well established in merger enforcement.¹⁸¹

178. Wikipedia maintains updated lists of the firms acquired by each of the dominant platforms. See, e.g., List of Mergers and Acquisitions by Meta Platforms, Wikipedia, https://en.wikipedia.org/wiki/List_of_mergers_and_acquisitions_by_Meta_Platforms [<https://perma.cc/BY9G-8LW6>] (last visited Oct. 6, 2022) (showing ninety-two acquisitions by Meta alone).

179. See Kevin A. Bryan & Erik Hovenkamp, Antitrust Limits on Startup Acquisitions, 56 *Rev. Indus. Org.* 615, 617 (2020); Kevin A. Bryan & Erik Hovenkamp, Startup Acquisitions, Error Costs, and Antitrust Policy, 87 *U. Chi. L. Rev.* 331, 354 (2020).

180. Ashley Carman, Instagram Would Be Better Off Without Facebook, *Verge* (Dec. 20, 2020), <https://www.theverge.com/2020/12/10/22165534/instagram-facebook-antitrust-ftc-lawsuit-monopoly-case-opportunity> [<https://perma.cc/MFE3-BZHF>] (“[T]he Federal Trade Commission joined with 48 state attorneys general to call for a court-ordered divestiture of Instagram and WhatsApp—essentially, forcing Facebook to undo both acquisitions and spin them back into independent companies.”).

181. See Antitrust Div., DOJ, Merger Remedies Manual 6–7 (2020), <https://www.justice.gov/atr/page/file/1312416/download> [<https://perma.cc/R7S7-V4QG>] (noting that the divested firm must be given all assets—as well as access to an installed base of customers—required to be an effective long-term competitor). The manual states: “In markets where an installed base of customers is required in order to operate at an effective scale, the divested assets should either convey an installed base of customers to the purchaser or quickly enable the purchaser to obtain an installed customer base.” *Id.* at 7. Further, this may require compulsory licensing of IP rights. *Id.* (citing *United States v. Nat'l Lead Co.*, 332 U.S. 319, 348 (1947)).

What would be more unusual would be an order that forced Facebook to share this data with *everyone* as a remedy for a specific merger with a single firm. In its *Facebook* decision, the district court accepted the FTC's allegation that the high switching costs resulting from Facebook's lock on each user's accumulated data be treated as a barrier to entry, not as a unique problem related to a particular merger.¹⁸² That seems correct, but one important thing about entry barriers is that when they operate at all they operate against everyone, including both established potential rivals and even firms that are not yet in existence. In that case, it seems quite appropriate that an interoperability order run not merely in favor of Instagram but also for all actual and potential rivals that might be in a position to take advantage of it. That is, it should take the form of removal of the entry barrier. While this might seem like overreaching when given as a remedy for a particular merger, it is clearly not when used as a remedy for monopolization, which is concerned with general market dominance. *AT&T* was not a merger case, but it was a monopolization case and the principle is the same. The *AT&T* decree required sharing with *everyone*,¹⁸³ including potential entrants, and not just with the firms that formerly were constituent parts of AT&T.¹⁸⁴

Lest such decrees seem excessively regulatory, particularly given the conservative tilt of the current Supreme Court, one should look at the decree that this very Court approved in *NCAA v. Alston*.¹⁸⁵ While the NCAA is an elaborate networked market, the *Alston* decision did not govern network operations. Rather it involved the rules that the NCAA made collaboratively among its members to place limits on the compensation of student athletes.¹⁸⁶ The decree was complex, covering a variety of forms that athlete compensation could take.¹⁸⁷ The Court approved it, observing that as of the time of its opinion the district court's decree seemed to be working quite well, without excessive court intervention.¹⁸⁸ Ongoing decrees can be modified if they are not working well.¹⁸⁹

182. Fed. Trade Comm'n v. Facebook, Inc., 581 F. Supp. 3d 34, 50–52 (D.D.C. Jan. 11, 2022).

183. One important qualification is that the *AT&T* decree was a consent decree, which courts have approved even though the terms of the decree reach beyond what a court would have ordered as a litigated remedy. See Areeda & Hovenkamp, *supra* note 144, § 327(a).

184. See *supra* notes 64–71 and accompanying text.

185. *NCAA v. Alston*, 141 S. Ct. 2141, 2145 (2021) (holding that the “district court’s injunction [of the NCAA] was consistent with established antitrust principles”).

186. *Id.* at 2149–50.

187. The decree is analyzed in Herbert Hovenkamp, A Miser’s Rule of Reason: The Supreme Court and Antitrust Limits on Student Athlete Compensation, 78 N.Y.U. Ann. Surv. Am. L. 1 (2022).

188. *Alston*, 141 S. Ct. at 2163–65.

189. Codification could be made easier, however. See generally Paul H. Sukenik, The Earth Belongs to the Living, or at Least It Should: The Troubling Difficulty of Modifying Antitrust

CONCLUSION

If a platform is truly winner-take-all, then the firm who controls it does not need exclusionary practices in order to remain dominant. That does not necessarily mean that it will not use them. Once again, AT&T is an important example of a firm that traditionally was thought to be a natural monopoly but whose position was challenged by the emergence of a differentiated product—namely, wireless technologies.¹⁹⁰ It was actually condemned for unlawful refusals to deal,¹⁹¹ which are idiosyncratic because the only violation is the refusal to share the facility. Today it is doubtful that refusal-to-deal law would reach that far.¹⁹² If it does not and if the firm avoids other unlawful practices, then a legislative solution may be the only alternative.

While imposed interoperability or restructuring of management are aggressive remedies, it bears emphasis that under current antitrust law they could be imposed by judicial decree only after an antitrust violation has been found. At that point, while the antitrust court's equity powers are broad, the question of prudence remains. For simple anticompetitive contracts or other discrete behaviors, an injunction may be the most effective and the least disruptive. When such remedies are inadequate, however, proposed relief needs to be tested against the requirement that it can reasonably be expected to restore competitive conditions.

To be sure, this Piece may be understating the difficulty of administering complex interoperability decrees. Michael Kades and Fiona Scott Morton are sufficiently pessimistic that they advocate formation of a technical committee overseen by antitrust enforcers to adopt workable interconnection standards.¹⁹³ That seems premature, at least at a time when we do not have a great deal of experience with judicially enforced interoperability. Disputes will certainly arise over issues related to the scope, terms, or prices of sharing. But ordinary bargaining relationships, including arbitration or district court intervention in the case of impasse, would be less intrusive. Both the elaborate interconnection agreements contemplated by the 1996 Telecommunications Act and the provisions for FRAND licensing of standard essential patents operate in this fashion. They contemplate private negotiation, with judicial (or arbitrator) intervention only when needed. Another less costly possibility is agency

Consent Decrees, 97 N.C. L. Rev. 734 (2019) (laying out the difficulties of modifying antitrust consent decrees and proposing suggestions to make them easier to modify).

190. See *supra* notes 78–80 and accompanying text.

191. *MCI Commc'ns Co. v. AT&T*, 708 F.2d 1081, 1132–34 (9th Cir. 1983) (finding that AT&T's refusal to permit MCI to interconnect violated antitrust essential facilities doctrine).

192. *Verizon Commc'ns, Inc. v. Law Off. of Curtis V. Trinko, LLC*, 540 U.S. 398, 415–16 (2004) (holding that Verizon's disobedience of the Communications Act's interconnection requirements was not an antitrust violation, although not explicitly overruling *AT&T*).

193. Kades & Scott Morton, *supra* note 10 (manuscript at 3).

guidelines. It bears emphasis, however, that interoperability remedies will require a significant amount of distinctive treatment in different industries and even for individual networks or other assets.

Unlike the courts, Congress has the power to impose interoperability remedies without finding an antitrust violation. Whether it should do so is another matter. While Congress is not bound by the same constraints as a court, it should be guided by the same principle: An interoperability provision should make a market more competitive, with success measured by higher market output and lower prices.

Interoperability is a two-sided coin. One of the great values of competition, and of digital competition in particular, is its diversity. Excessive interoperability covering too many of the features of individual firms may simply serve to homogenize the market, destroying competitive incentives and inviting free riding. When choice is realistically available, effective choice is the best remedy. This militates in favor of “static” interoperability, or data portability, in a case such as Facebook. It also suggests that a firm such as Amazon—in the case of a proven violation of § 2 of the Sherman Act—would best be dealt with by making its management more competitive rather than using legislation or the courts to micromanage its product choices.