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Herbert J. Hovenkamp

University of Pennsylvania Carey Law School

Author ORCID Identifier:

 [Herbert Hovenkamp 0000-0002-4583-5162](https://orcid.org/0000-0002-4583-5162)

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Recommended Citation

130 Yale L.J. 1952 (2021).

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THE YALE LAW JOURNAL

HERBERT HOVENKAMP

Antitrust and Platform Monopoly

ABSTRACT. Contrary to common belief, large digital platforms that deal directly with consumers, such as Amazon, Apple, Facebook, and Google, are not “winner-take-all” firms. They must compete on the merits or otherwise rely on exclusionary practices to attain or maintain dominance, and this gives antitrust policy a role. While regulation may be appropriate in a few areas such as for consumer privacy, antitrust’s firm-specific approach is more adept at addressing most threats to platform competition.

When platforms exert their market power over other firms, liability may be apt, but remedies present another puzzle. For the several pending antitrust complaints against Google and Facebook, for instance, what should be the remedy if there is a violation? Breaking up large firms that benefit from extensive economies of scale and scope will injure consumers and most input suppliers, including the employees who supply labor. In many situations, a better approach would be to restructure management rather than assets, which would leave the platform intact as a production entity but make decisionmaking more competitive. A second option to breaking up firms would be to require interoperability—and in the information context, mandate the pooling of valuable information. These measures could promote competition and simultaneously increase the value of positive network effects.

Finally, this Article examines another aspect of platforms—their acquisitions. For the most salient category of platform acquisitions of nascent firms, the greatest threat to competition comes from platforms’ acquisitions of complements or differentiated technologies. Current merger-enforcement tools are ill suited to analyze this new variation on competitive harm. New approaches are required.

AUTHOR. James G. Dinan University Professor, University of Pennsylvania Carey Law School and The Wharton School. Thanks to Erik Gordon, Erik Hovenkamp, Fiona Scott Morton, Elizabeth Pollman, Steve Salop, Richard Schmalensee, and D. Daniel Sokol for commenting on a draft, and to Nicholas Whetstone for valuable research assistance.



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INTRODUCTION

Should antitrust policy do more to promote competition in digital-platform markets? And is it the best tool for the job? The claim that antitrust is falling short comes from both the left and the right, but it provokes strong disagreement. How much of the call for action is a response to real competitive harm, and how much is it simply a reaction to large firm size, personal animus, myopia, or perceived political power? The source of hostility is unclear.

This is evident in the forty responses to the House Judiciary Committee's request for recommendations concerning digital-platform monopoly.¹ Some believe that everything is fine, and we should make few substantive changes.² They worry that misplaced government intervention could derail the greatest engines of economic growth in recent history. Others would drive over the industry with a power mower, breaking up the platforms with little thought about the impact on output or consumers.³ Meanwhile, the enforcers have not been idle. The Antitrust Division of the U.S. Department of Justice (DOJ), the Federal Trade Commission (FTC), and numerous state attorneys general have filed antitrust complaints against both Google and Facebook. The European Commission has filed a statement of objections against Amazon,⁴ and Apple is embroiled in several private antitrust actions.⁵

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1. See *Digital Markets Investigation: Antitrust Investigation of the Rise and Use of Market Power Online and the Adequacy of Existing Antitrust Laws and Current Enforcement Levels*, HOUSE COMM. ON JUDICIARY, <https://judiciary.house.gov/issues/issue/?IssueID=14921> [<https://perma.cc/HM6U-RW47>] [hereinafter *House Antitrust Investigation*] (including submissions from scholars and former antitrust enforcers).
 2. See, e.g., *id.* (submissions of Geoffrey Manne, Thomas Hazlett, Thomas Lambert, and the International Center for Law & Economics).
 3. See, e.g., ZEPHYR TEACHOUT, *BREAK 'EM UP: RECOVERING OUR FREEDOM FROM BIG AG, BIG TECH, AND BIG MONEY* 6–9 (2020); Sophia Lam, Opinion, *It's Time to Break Up Big Tech*, GATE (Oct. 20, 2019), <http://uchicagogate.com/articles/2019/10/20/its-time-break-big-tech> [<https://perma.cc/K48V-GAVR>]. Somewhat more sensitive to the administrability question is Rory Van Loo, *In Defense of Breakups: Administering a "Radical" Remedy*, 105 CORNELL L. REV. 1955 (2020).
 4. See European Commission Press Release, *Antitrust: Commission Sends Statement of Objections to Amazon for the Use of Non-Public Independent Seller Data and Opens Second Investigation into Its E-Commerce Business Practices* (Nov. 10, 2020), https://ec.europa.eu/commission/presscorner/detail/en/ip_20_2077 [<https://perma.cc/5KVE-LKK8>].
 5. See *Apple Inc. v. Pepper*, 139 S. Ct. 1514, 1525 (2019) (sustaining a purchaser complaint challenging App Store commissions); *In re Apple iPhone Antitrust Litig.*, No. 11-cv-06714-YGR, 2021 WL 75741 (N.D. Cal. Jan. 8, 2021); *Blix Inc. v. Apple Inc.*, No. 19-1869-LPS, 2020 WL 7027494 (D. Del. Nov. 30, 2020) (challenging the exclusion of a competitor's email program from the App Store); *Epic Games, Inc. v. Apple Inc.*, No. 4:20-cv-05640-YGR, 2020 WL 5993222 (N.D. Cal. Oct. 9, 2020) (challenging the exclusion of a game from the App Store).

One question underlying all of this activity is whether antitrust law's focused and litigation-driven approach is sufficient to address competition problems in digital platforms. Are the platforms so resistant to ordinary market mechanisms that they call for more pervasive public control?

If action is needed, the alternative to antitrust is some form of regulation. But broad regulation is ill-suited for digital platforms because they are so disparate. By contrast, regulation in industries such as air travel, electric power, and telecommunications targets firms with common technologies and similar market relationships. This is not the case, however, with the four major digital platforms that have drawn so much media and political attention—namely, Amazon, Apple, Facebook, and Google. These platforms have different inputs. They sell different products, albeit with some overlap, and only some of these products are digital. They deal with customers and diverse sets of third parties in different ways. What they have in common is that they are very large and that a sizeable portion of their operating technology is digital. To be sure, increased regulatory oversight of individual aspects of their business—such as advertising, acquisitions, or control of information—is possible and likely even desirable. But the core of their business models should be governed by the antitrust laws.

This Article argues that sustainable competition in platform markets is possible for most aspects of their business. As a result, the less intrusive and more individualized approach of the antitrust laws is better for consumers, input suppliers, and most other affected interest groups than broad-brush regulation. It will be less likely to reduce product or service quality, limit innovation, or reduce output. Where antitrust law applies, federal judges should be given a chance to apply the law.

The biggest roadblock to an antitrust-focused approach is not intrinsic but ideological—an antienforcement bias has haunted antitrust since the late twentieth century.

Antitrust law and scholarship speak to competition problems on large digital platforms with various levels of engagement. The Chicago School in particular pushed a mindset that saw markets as all alike.⁶ This leaves judges toothless when confronted with an industry that behaves in unexpected ways.

More moderate students of antitrust are more circumspect, appreciating that both markets and firms are institutions that can be quite different from one another. As a result, their approaches require more specific fact finding rather than overly broad policy generalizations. Digital platforms, in this view, are merely one of the variations. For example, in *Ohio v. American Express Co. (Amex)*,

6. See Herbert Hovenkamp & Fiona Scott Morton, *Framing the Chicago School of Antitrust Analysis*, 168 U. PA. L. REV. 1843, 1846 (2020); Christopher S. Yoo, *The Post-Chicago Antitrust Revolution: A Retrospective*, 168 U. PA. L. REV. 2145, 2153 (2020).

Justice Breyer in dissent was much more comfortable with factual examination of the particular digital market than the Court's majority.⁷ The majority spoke mainly in generalities, largely ignored the record, and drew legal conclusions that are inconsistent with fundamental economic principles.⁸ Antitrust law needs to treat digital-platform markets for what they are: markets that have some unique characteristics, but markets nonetheless susceptible to fact-specific antitrust analysis.

To begin that analysis, a digital platform is a website, app, or other digital venue that interacts commercially⁹ with one or more groups of users. A "two-sided" digital platform is one that facilitates activities involving at least two interdependent groups of users.¹⁰ In some cases (Amazon, eBay, Uber, and Amex), transactions between these groups are negotiated directly on the website. In other cases (Google Search, Facebook, Match.com, and most periodicals and electronic video games), users do not make commercial transactions directly with one another, but their commercial transactions support the platform as a profit center.

This Article first considers the nature of platform power and the extent to which competition is possible or desirable in markets dominated by digital platforms, including those that are two-sided. It then discusses remedies for anti-competitive abuses and proposes two new approaches. From there, it contemplates reform; one area that may require new legislation or at least a change in judicial thinking is mergers involving very large platforms.¹¹

On remedies, courts could tailor novel forms of relief without new legislation. One new proposal is that intrafirm decisionmaking could be restructured in ways that facilitate competition *inside* a platform, rather than between the platform and other entities. This could be accomplished without breaking up the platforms themselves. Another promising proposal is forced interoperability or pooling, which can make markets more efficient by broadening the range of positive network effects. Both of these alternatives could enable greater competition without jeopardizing productivity and consumer value, which would be at risk

7. See 138 S. Ct. 2274, 2294-97 (2018) (Breyer, J., dissenting).

8. See Herbert Hovenkamp, *Platforms and the Rule of Reason: The American Express Case*, 2019 COLUM. BUS. L. REV. 35, 47.

9. While not every platform engages in commercial activities, antitrust law reaches only those that are in or affect commerce. See PHILLIP E. AREEDA & HERBERT HOVENKAMP, *ANTITRUST LAW: AN ANALYSIS OF ANTITRUST PRINCIPLES AND THEIR APPLICATION* ¶¶ 260-62 (5th ed. 2020).

10. See *infra* Section I.B.

11. See *infra* Part III.

if productive assets were to be broken up. Existing law provides ample precedent to support these remedies.¹²

I. DIGITAL-PLATFORM MONOPOLY

A. Assessing Platform Power

Antitrust policy is concerned with exercises of market power, which is the power to profit by reducing output below the competitive level and increasing prices unreasonably above cost.¹³ Alternative articulations, such as concern for the “competitive process,”¹⁴ provide no content against which results can be evaluated. Further, antitrust doctrine does not condemn firms simply because they are very large, although that would simplify the analysis. It rejects imposing liability based on size because size and market power do not always go hand in hand.

For digital platforms, the market-power question is complex because each platform does business in a variety of products or services and employs diverse technologies. Two-sided platforms pose particular problems because one cannot estimate power on one side without considering interactions from the other side.

1. “Direct” vs. “Indirect” Measures of Market Power

Traditionally, courts have measured market power “indirectly,” inferring from a firm’s market share in a “relevant market.”¹⁵ A market consists of a group of products or services that are close substitutes for each other.¹⁶ That methodology dominated antitrust analysis through the twentieth century, but economists have increasingly favored more “direct” measures, which rely on empirical measurement of output responses to price changes. These methods do not typically require a market definition, avoiding questions of how broadly or narrowly to define the relevant class of goods or services. Further, direct measures are more accurate and permit finer adjustments, provided that the data for using

12. See *infra* Section II.C.2.

13. See AREEDA & HOVENKAMP, *supra* note 9, ¶ 501; William M. Landes & Richard A. Posner, *Market Power in Antitrust Cases*, 94 HARV. L. REV. 937, 937 (1981).

14. E.g., *FTC v. Qualcomm Inc.*, 969 F.3d 974, 990 (9th Cir. 2020) (quoting *United States v. Microsoft Corp.*, 253 F.3d 34, 58 (D.C. Cir. 2001)); *Viamedia, Inc. v. Comcast Corp.*, 951 F.3d 429, 453 (7th Cir. 2020) (same).

15. On the methodology, see AREEDA & HOVENKAMP, *supra* note 9, ¶¶ 530–71.

16. *Id.* ¶ 530a (measuring markets by the scope of a “hypothetical cartel” or “hypothetical monopoly”).

them are available.¹⁷ They are particularly attractive for measuring the market power of digital platforms because nearly all transactions in platform markets produce a digital record.

Today, economists use both direct and indirect methodologies for assessing power in digital markets. They also urge caution, however, that traditional market-definition and market-share measurements can be particularly unreliable in cases involving digital platforms.¹⁸ In any event, the process is driven primarily by data, case-specific facts, and expert economic testimony.¹⁹

Notwithstanding its advantages, direct measurement of power in antitrust litigation is technical and somewhat novel. Judicial acceptance has been spotty. In merger policy, direct measures without the need for a market definition have enjoyed considerable success in unilateral-effects analysis of horizontal

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17. *Id.* ¶ 521 (discussing the economic theory); see also Louis Kaplow, *Why (Ever) Define Markets*, 124 HARV. L. REV. 437, 438 (2010) (arguing that the market-definition approach should be abandoned “entirely”). See generally Louis Kaplow, *Market Definition: Impossible and Counterproductive*, 79 ANTITRUST L.J. 361 (2013) (noting numerous weaknesses in traditional market-share measures); Louis Kaplow, *On the Relevance of Market Power*, 130 HARV. L. REV. 1303 (2017) (similar). On the methodologies for identifying market share, see generally Jonathan B. Baker & Timothy F. Bresnahan, *Economic Evidence in Antitrust: Defining Markets and Measuring Market Power*, in HANDBOOK OF ANTITRUST ECONOMICS 1 (Paolo Buccirossi ed., 2008); and Jonathan B. Baker & Timothy F. Bresnahan, *Empirical Methods of Identifying and Measuring Market Power*, 61 ANTITRUST L.J. 3 (1992). To understand how one might conduct such analysis at the macro level, see generally Robert E. Hall, *Using Empirical Marginal Cost to Measure Market Power in the US Economy* (Nat’l Bureau of Econ. Research, Working Paper No. 25251, 2018), https://www.nber.org/system/files/working_papers/w25251/w25251.pdf [<https://perma.cc/BK6E-DB3E>].
 18. See, e.g., David S. Evans, *Multisided Platforms, Dynamic Competition, and the Assessment of Market Power for Internet-Based Firms* 29–32 (Coase-Sandor Inst. for Law & Econ., Working Paper No. 753, 2016), <https://ssrn.com/abstract=2746095> [<https://perma.cc/B5LH-P5ZK>] (urging caution when using market-share data).
 19. See, e.g., Elena Argentesi & Lapo Filistrucchi, *Estimating Market Power in a Two-Sided Market: The Case of Newspapers*, 22 J. APPLIED ECONOMETRICS 1247, 1247 (2007); Eric Emch & T. Scott Thompson, *Market Definition and Market Power in Payment Card Networks*, 5 REV. NETWORK ECON. 45, 45 (2006); Chris Pike, *Rethinking Antitrust Tools for Multi-Sided Platforms: 2018*, OECD (Apr. 6, 2018), <http://www.oecd.org/daf/competition/Rethinking-antitrust-tools-for-multi-sided-platforms-2018.pdf> [<https://perma.cc/ANS4-BHFN>] (comparing the methodologies); Minjae Song, *Estimating Platform Market Power in Two-Sided Markets with an Application to Magazine Advertising* (Simon Sch., Working Paper No. FR 11-22, 2013), <https://ssrn.com/abstract=1908621> [<https://perma.cc/BM7F-KREG>]. Some lawyers continue to rely mainly on traditional indirect methods, although with qualifications. See, e.g., Kenneth A. Bamberger & Orly Lobel, *Platform Market Power*, 32 BERKELEY TECH. L.J. 1051, 1062–63 (2017).

mergers.²⁰ The Supreme Court has also approved more direct measures in some cases involving horizontal restraints.²¹

For vertical agreements, however, the Supreme Court in *Amex* held that a relevant market must be defined in a vertical-restraints case even where the plaintiffs had provided direct proof of market power.²² The Court's rationale is difficult to understand,²³ and the decision's effect at the time of this writing remains unclear. However, *Amex* casts a pall over enforcement against digital platforms because a high percentage of antitrust challenges to platforms are likely to be vertical—that is, involving contracts between a platform and its various product suppliers, advertisers, and even customers. These contracts could include most-favored-nation clauses, exclusive dealing or tying, or other types of exclusionary vertical agreements.²⁴

There is a workaround, however. Merger analysis has also been hampered by the Supreme Court's conclusion in *Brown Shoe* nearly sixty years ago that the antitrust merger provision, section 7 of the Clayton Act, requires a market

20. "Unilateral effects" merger analysis considers whether a merger of two relatively proximate firms in a product-differentiated market will give the postmerger firm a higher profit-maximizing price than prior to the merger. See, e.g., *United States v. H & R Block, Inc.*, 833 F. Supp. 2d 36, 84 n.35 (D.D.C. 2011) ("As a matter of applied economics, evaluation of unilateral effects does not require a market definition . . ." (quoting AREEDA & HOVENKAMP, *supra* note 9, ¶ 913)). For a good discussion that expresses doubt about conventional market-share measurement in high-tech markets, see Daniel A. Crane, *Market Power Without Market Definition*, 90 NOTRE DAME L. REV. 31 (2014).

21. See, e.g., *FTC v. Actavis, Inc.*, 570 U.S. 136, 157 (2013); *FTC v. Ind. Fed'n of Dentists*, 476 U.S. 447, 460–61 (1986).

22. *Ohio v. Am. Express Co.*, 138 S. Ct. 2274, 2286 (2018).

23. The issue was not briefed, and the Court's entire discussion is in a footnote, which reads,

The plaintiffs argue that we need not define the relevant market in this case because they have offered actual evidence of adverse effects on competition—namely, increased merchant fees. We disagree. The cases that the plaintiffs cite for this proposition evaluated whether horizontal restraints had an adverse effect on competition. Given that horizontal restraints involve agreements between competitors not to compete in some way, this Court concluded that it did not need to precisely define the relevant market to conclude that these agreements were anticompetitive. But vertical restraints are different. Vertical restraints often pose no risk to competition unless the entity imposing them has market power, which cannot be evaluated unless the Court first defines the relevant market.

Id. at 2285 n.7 (citations omitted). For further analysis, see Herbert Hovenkamp, *The Looming Crisis in Antitrust Economics*, 101 B.U. L. REV. (forthcoming 2021), <https://ssrn.com/abstract=3508832> [<https://perma.cc/A4CK-BBXA>].

24. See *infra* notes 222–224 and accompanying text.

definition.²⁵ One can neutralize this requirement by using direct evidence to establish that a firm or group of firms has the requisite power over price, and infer that this particular firm or grouping is a relevant market. After all, a relevant market is a grouping of sales for which an unjustified price increase is profitable.²⁶ Once direct econometric analysis has established that a firm or group of firms has sufficient power to charge a noncompetitive price, we can conclude that this grouping constitutes a relevant market.

Traditional market-definition measures also produce one difficulty that can particularly hamper analysis in platform markets. If a market is product-differentiated, any conclusion about market definition is wrong.²⁷ Market definition is necessarily binary; it can only count a product as inside or outside a market. It cannot meter rates of substitution.

For example, consider whether “digital advertising” is a relevant market. That question is relevant to any issue that involves the practices of such firms as Google or Facebook in advertising markets. If we decide that digital advertising is a relevant market, we have effectively concluded that digital advertising and other more traditional forms of advertising do not compete with each other at all. This is incorrect. By contrast, if we group all forms of advertising into a single “advertising” market, that implies that all forms of advertising are perfect substitutes such that people do not distinguish among them. This is also incorrect. The advantage that direct measures have is that they can accommodate nuance, factoring in, for example, the rate at which firms change their purchases in response to a price change that affects one type of advertising but not the other.²⁸

Two-sidedness further complicates the measurement of market power, as price changes can produce responsive effects on both sides.²⁹ For example, viewed in isolation, a price increase on one side of the platform may look like an exercise of power, but it may be offset by a cost increase or an increase in services on the other side. This is particularly important for measurements of price-cost relationships. For example, it would be incorrect to conclude that Google

25. *Brown Shoe Co. v. United States*, 370 U.S. 294, 324 (1962) (interpreting the Clayton Act’s “section of the country” and “line of commerce” language as requiring a geographic market and a product market, respectively).

26. HERBERT HOVENKAMP, *FEDERAL ANTITRUST POLICY: THE LAW OF COMPETITION AND ITS PRACTICE* § 3.1 (6th ed. 2020).

27. On the impact of product differentiation, see *infra* Section I.C.4.

28. For an illustration of the problem, see Complaint ¶¶ 72–81, *Colorado v. Google LLC*, No. 1:20-cv-03715 (D.D.C. Dec. 17, 2020) [hereinafter *Colorado Google Compl.*], which alleges a relevant market of “general search text advertising,” exclusive of other forms of online and offline advertising. In this case, the data should be available to measure directly the residual elasticity of demand for such advertising.

29. On the definition of two-sided markets, see *infra* Section I.B.

provides search services below cost because the price to users is zero. Google obtains all its revenue from advertisers or paid search-engine placement. In credit-card markets, the price to customers is often less than zero, because card companies offer rewards for card usage that exceed customer fees. The card issuer's revenue comes almost entirely from merchants.³⁰

For *both* indirect and direct methodologies, power assessment on two-sided platforms requires considering the reactions that occur on the opposite side.³¹ One cannot avoid the need to consider the other side simply by defining a relevant market. For example, Uber charges higher “surge” prices during rush hour. Is doing so an exercise of market power over passengers? After all, the price goes up, and costs are not obviously higher. Or is surge pricing simply meant to ration scarce drivers during a period of high demand?³² These are testable propositions, which require data from both sides of the market to determine.

In networked or two-sided markets, sufficient market power can be found on smaller shares than in more traditional markets, particularly where shares among the top firms are uneven. Both high fixed costs and network effects operate to give larger firms a big advantage over small ones. This could become relevant in the FTC's antitrust case against Facebook, where Facebook is alleged to maintain around 60% of a market for “personal social networking” services, apparently measured from user data.³³ That figure is at the lower end of the range usually required for monopolization claims. Nevertheless, given declining

30. See *Ohio v. Am. Express Co.*, 138 S. Ct. 2274, 2281-82 (2018); John M. Newman, *Antitrust in Zero-Price Markets: Applications*, 94 WASH. U. L. REV. 49, 80 (2016).

31. Pike, *supra* note 19, at 15 (“For the purposes of a competitive assessment there is little meaningful distinction between defining a two-sided market and defining two interrelated markets, as long as the effect of the cross-platform network effect is recognised and analysed.”).

32. The issue is currently being litigated. See, e.g., *SC Innovations, Inc. v. Uber Techs., Inc.*, No. 18-cv-07440-JCS, 2020 WL 2097611, at *3 (N.D. Cal. May 1, 2020) (refusing to dismiss a complaint alleging that Uber surge pricing constituted unlawful monopolistic price discrimination); see also *Meyer v. Kalanick*, 477 F. Supp. 3d 52, 57 (S.D.N.Y. 2020) (sustaining the arbitrator's conclusion that Uber's surge pricing did not violate the antitrust laws).

33. Complaint for Injunctive and Other Equitable Relief ¶ 64, *FTC v. Facebook, Inc.*, 1:20-cv-03590-JEB (D.D.C. Dec. 9, 2020) [hereinafter *FTC Facebook Compl.*]. Forty-eight states filed their own, somewhat broader complaint, and the actions have now been consolidated. Complaint ¶ 4, *New York v. Facebook, Inc.*, No. 1:20-cv-03589-JEB (D.D.C. Dec. 9, 2020) [hereinafter *New York Facebook Compl.*]. Their complaint cites Facebook's own claim that Facebook is “95% of all social media,” *id.* ¶ 68, and also that at least 78% of respondents to a survey reported visiting Facebook at least once a month, *id.* ¶ 69. StatCounter, which groups diverse sites including YouTube, gives Facebook a 60.68% share in the United States as of January 2021; it also gives another 1.56% to Instagram, which Facebook owns. See *Social Media Stats in United States of America—January 2021*, STATCOUNTER, <https://gs.statcounter.com/social-media-stats/all/united-states-of-america> [https://perma.cc/4NGU-G7PQ]. The StatCounter unit of measurement is page views per month, excluding bot activity.

costs and network effects, it will be much harder for smaller firms to pry sales away from a 60% firm in these market conditions than in the ordinary case of non-networked manufacturers.³⁴ But declining costs and network effects are not the whole story; widespread multi-homing and low switching costs would tend to reduce these advantages.³⁵

Facebook's 60% market share would certainly be enough to support a claim of an attempt to monopolize,³⁶ although neither the FTC nor the states' complaints allege attempted monopolization. To the extent Facebook continues to acquire additional young firms and enforce its restrictions on app developers and other parties, an attempt case seems quite appropriate.³⁷ One difference between the attempted and realized offenses is that courts might be more reluctant to order divestiture if only attempted monopolization is proven.

Another question that the courts have not addressed is, when measuring market share in a two-sided platform, which side should be used? A common feature of platforms is that competitive effects manifest on one side, while the defendant obtains its revenue from the other side. For example, in the Facebook case, the FTC alleges that Facebook has a 60% market share for "personal social networking services."³⁸ The complaint also alleges that Facebook earns "substantially all of [its] revenue from advertising," which is the other side of the market.³⁹ Other sources indicate that Facebook holds approximately 22% of the market for digital advertising.⁴⁰ The same phenomenon arises with Google Search, which hosts over 90% of internet searches and is free to users, but its share of

34. See Pike, *supra* note 19, at 16 (observing that "cross-platform network effects can magnify the competitive constraints that exist, while also raising a barrier to entry by potential rivals and restricting the emergence of new competitive constraints").

35. Cf. FTC Facebook Compl., *supra* note 33, ¶ 65 (alleging that Facebook users are subject to high switching costs because they would have to transfer their accumulated personal data). On multi-homing, see *infra* text accompanying notes 90-100.

36. Section 2 of the Sherman Act expressly prohibits both monopolization and attempts. 15 U.S.C. § 2 (2018). On the minimum market shares for attempts to monopolize, see AREEDA & HOVENKAMP, *supra* note 9, ¶ 807d.

37. The states, but not the Federal Trade Commission (FTC), also challenge Facebook's acquisitions of Instagram and WhatsApp under section 7 of the Clayton Act. New York Facebook Compl., *supra* note 33, ¶¶ 263-67 (Instagram acquisition); *id.* ¶¶ 268-72 (WhatsApp acquisition).

38. See FTC Facebook Compl., *supra* note 33, ¶ 2.

39. *Id.* ¶ 50.

40. See Greg Sterling, *Almost 70% of Digital Ad Spending Going to Google, Facebook, Amazon, Says Analyst Firm*, MKTG. LAND (June 17, 2019), <https://marketingland.com/almost-70-of-digital-ad-spending-going-to-google-fb-amazon-says-analyst-firm-262565> [https://perma.cc/H9US-AEY4].

digital-ad spending, where Google Search obtains most of its revenue, is around 29.4%.⁴¹

Alleging harm on the side with the lower market share can lead to conceptual anomalies that seem to be at odds with traditional antitrust doctrine, although that should not be the result. For example, one source of harm alleged in the FTC's Facebook complaint is to consumers in the form of decreased user features, user functionality, variety, and choice.⁴² However, the complaint also alleges harm to the market for the "sale of advertising," where Facebook's share is not alleged to be dominant. That harm is alleged to consist of higher prices, as well as less innovation in advertising and increasing "transparency, integrity, authentication of ad views, customer service," and production of advertising metrics.⁴³ In the complaint, the FTC alleges:

By suppressing, neutralizing, and deterring the emergence and growth of personal social networking rivals, Facebook also suppresses meaningful competition for the sale of advertising. Personal social networking providers typically monetize through the sale of advertising; thus, more competition in personal social networking is also likely to mean more competition in the provision of advertising. By monopolizing personal social networking, Facebook thereby also deprives advertisers of the benefits of competition, such as lower advertising prices and increased choice, quality, and innovation related to advertising.⁴⁴

This claim vaguely resembles monopoly "leveraging" — the idea that a firm may unlawfully use its dominance in one market (user services) in order to obtain a competitive advantage in a different market (advertising) without directly monopolizing the second market. While some version of the leveraging claim is accepted under the European Union's "abuse of dominance" test,⁴⁵ U.S. antitrust law has not accepted it.⁴⁶

Nevertheless, an inherent feature of two-sided markets is that practices on one side can cause harms or benefits that manifest on the other side. These

41. See *Google's US Ad Revenues to Drop for the First Time*, INSIDER INTELLIGENCE (June 22, 2020), <https://www.emarketer.com/newsroom/index.php/google-ad-revenues-to-drop-for-the-first-time> [https://perma.cc/ZY6Q-2C8Q].

42. See FTC Facebook Compl., *supra* note 33, ¶ 162.

43. See *id.* ¶¶ 166–67.

44. *Id.* ¶ 28.

45. See Herbert Hovenkamp, *The Legal Periphery of Dominant Firm Conduct*, in COMPETITION LAW AND ECONOMICS: ADVANCES IN COMPETITION POLICY ENFORCEMENT IN THE EU AND NORTH AMERICA 238, 249–63 (Abel M. Mateus & Teresa Moreira eds., 2010).

46. See AREEDA & HOVENKAMP, *supra* note 9, ¶ 652.

cannot be disentangled from one another, even if shares on the two sides differ. That is to say, Google can monopolize search even though many of the harms show up on the other side of the market. The best way to address these problems is to permit a monopolization case to go forward if power is being established on the basis of market share and *either* of the two sides has a market share high enough to warrant further inquiry under section 2. The fact that the exercise of power on one side shows up mainly as harms on the other side is simply a feature of market two-sidedness. If market power is measured directly, this is much less likely to be a problem.

Market-power requirements also vary with the antitrust offense. For example, proof of unlawful contractual restraints – such as competitor collaborations, tying, or exclusive dealing – require a smaller market share than monopolization. For such contractual practices, the defendant need not be dominant in its market.⁴⁷ The FTC’s complaint against Facebook, however, is brought entirely under section 2, which is directed at unilateral conduct and generally requires more strenuous demonstrations of market power.⁴⁸

To date, American courts have never condemned monopolization without first defining a market.⁴⁹ Nevertheless, basing conclusions of market power on market definition unquestionably distorts results. For example, in the key digital-monopoly case *United States v. Microsoft Corp.*,⁵⁰ the government used indirect evidence of market share to show market power in a relevant market. The court accepted a market definition that excluded Apple’s Mac operating system (OS).⁵¹ That approach runs straight into the problem noted above: including Windows and the Mac OS in the same market would have treated them as

47. *E.g.*, HOVENKAMP, *supra* note 26, § 10.3a (finding that the minimum market share for tying is about 30%); *id.* § 10.9e (concluding that the minimum share for exclusive dealing is similar).

48. See FTC Facebook Compl., *supra* note 33, ¶ 174.

49. There is some dicta in *Microsoft* to the effect that direct evidence might be sufficient in a section 2 case, but the court relied on a dominant share of a relevant market. See *United States v. Microsoft Corp.*, 253 F.3d 34, 51, 56–57 (D.C. Cir. 2001); see also *id.* at 57–58 (stating that Microsoft’s conduct indicated possession of market power, even though the government had already established market power on the basis of market share). At one time the Ninth Circuit had held that a relevant market need not be defined in a case alleging attempt to monopolize, but the Supreme Court decisively rejected that view. See *Spectrum Sports v. McQuillan*, 506 U.S. 447, 452–53 (1993) (reversing the Ninth Circuit and overruling earlier cases such as *Lessig v. Tidewater Oil Co.*, 327 F.2d 459 (9th Cir. 1964)).

50. 253 F.3d at 34. For a critique of the court’s indirect methodology for proving market power in that case, see Crane, *supra* note 20, at 70–72.

51. *Microsoft*, 253 F.3d at 53; see also Commission Decision No. AT.40099 (*Google Android*), slip op. at 56–74 (18 July 2018), https://ec.europa.eu/competition/antitrust/cases/dec_docs/40099/40099_9993_3.pdf [<https://perma.cc/LP2B-LD3Y>] (excluding Apple’s iPhone OS from the relevant market for Android OS).

perfect competitors, which would be incorrect. But excluding the Mac OS treated them as if they did not compete at all, which was also incorrect.

As these problems illustrate, where data are available, direct measurement of power produces better results. Questions about market power are highly fact intensive. This indicates another fundamental problem with the Supreme Court's *Amex* decision. When the Court concluded that evaluation of vertical restraints requires a market definition, it took a question that is properly (and was, until *Amex*, uniformly) understood to be one of fact, and turned it into a question of law.

2. "Cluster" Markets

There is substantial antitrust precedent for recognizing "cluster" market definitions, which are markets for noncompeting goods or services sold from a common plant or platform. One example is the aggregation of hospital services measured by the number of patient admissions, even though the various medical procedures that patients require do not compete with one another.⁵² Another is the collection of noncompeting products sold by office-supply stores, such as paper clips, staplers, and pencils.⁵³

The Supreme Court has confirmed lower-court conclusions that the diverse services offered by a bank, such as checking accounts and loans, can be clustered into a single market.⁵⁴ It also agreed to a single-market definition that covered alarm services for burglary, fire, and water flow.⁵⁵ Applying these precedents to the FTC's Facebook complaint would support the Commission's claim that the market for "personal social network services" is in fact a cluster market, which combines features such as messaging, event management, discussion boards, a news feed, photo sharing, and video sharing. These services may function more as complements to rather than substitutes for each other.

Clustering noncompeting products for purposes of market-power analysis requires more than the simple observation that the products are sold in the same

52. *E.g.*, *Promedica Health Sys., Inc. v. FTC*, 749 F.3d 559, 565-68 (6th Cir. 2014) (clustering medical services that use similar facilities and assets).

53. *E.g.*, *FTC v. Staples, Inc.*, 190 F. Supp. 3d 100, 117 (D.D.C. 2016) ("Cluster markets allow items that are not substitutes for each other to be clustered together in one antitrust market for analytical convenience.").

54. *See United States v. Phila. Nat'l Bank*, 374 U.S. 321, 356-57 (1963) (stating that a banking market included deposits as well as loans to businesses and households); *see also United States v. Conn. Nat'l Bank*, 418 U.S. 656, 660-66 (1974) (similar); *United States v. Phillipsburg Nat'l Bank & Tr. Co.*, 399 U.S. 350, 379-83 (1970) (Harlan, J., concurring in part and dissenting in part) (similar).

55. *United States v. Grinnell Corp.*, 384 U.S. 563, 571-75 (1966).

store or on the same website. For example, Walmart sells both toasters and chainsaws, but that fact alone does not justify defining a joint toaster/chainsaw market. Rather, a cluster market is proper when clustering yields cost savings or transactional advantages, and these advantages are difficult to duplicate. These are sometimes referred to as “economies of joint provision.”⁵⁶ In effect, while traditional markets are groups of substitutes, the concept of cluster markets additionally recognizes that combining complements in production can sometimes produce market power. This is particularly true when network effects make aggregation valuable for people with diverse but overlapping tastes.

Clustering has been used in the case law only for purposes of market definition—i.e., for indirect measurement. The approach that it takes, however, can also be used in direct measurement because it involves estimating the savings in transaction costs that result from clustering.⁵⁷ To the extent that changes in transaction costs affect price-cost margins, these can affect direct measures of power. For example, Facebook is presumably much more valuable to customers than, say, five discrete sites that offer messaging, photo sharing, video posting, news, and discussion boards. Further, there are common costs that make offering them together cheaper. That could enable Facebook to increase its price relative to costs.

Cluster-market analysis is one way of approaching the question whether firms such as Amazon have market power in an array of products, even though most of them individually are sold in competitive markets, and Amazon’s market share in each individually may be small. A finding of fact that a single product, such as “tires,” is the relevant market yields the conclusion that Amazon has little market power. But if the relevant question is whether Amazon is dominant in retailing, then we should be querying whether its platform sales as a whole enable it to increase price-cost margins profitably.

In some cases, such as Google, the diverse products and services are not even provided on the same website. There is no doctrinal precedent for lumping together diverse, noncompeting products that are not even produced or sold together simply because the same seller offers them. If the relevant question is transaction-cost savings, however, then the question whether two products are sold on different platforms is less important.

56. See AREEDA & HOVENKAMP, *supra* note 9, ¶ 565c.

57. See Ian Ayres, Note, *Rationalizing Antitrust Cluster Markets*, 95 YALE L.J. 109, 114-15 (1985) (explaining that clustering confers competitive advantages to multiproduct firms in terms of economies of scope and transactional complementarities); see also Jonathan B. Baker, *Market Definition: An Analytical Overview*, 74 ANTITRUST L.J. 129, 157-59 (2007) (arguing against the use of clustering in defining markets); Gregory J. Werden, *The History of Antitrust Market Delineation*, 76 MARQ. L. REV. 123, 165-66 (1992) (noting the rationales that the Court has used for clustering have been somewhat “obscure”).

B. Identifying Two-Sided Platforms

A two-sided market is one that intermediates between at least two interdependent groups. These groups could be internet searchers and advertisers, rideshare users and drivers, or credit-card customers and merchants. The mere fact that business is conducted on a digital platform does not make it two-sided. For example, some digital platforms may be nothing more than venues for merchants to sell their own merchandise. Tesla, for example, manufactures its own vehicles and sells them principally online through its own digital platform.⁵⁸

In *Amex*, the Supreme Court defined two-sided platforms narrowly but idiosyncratically. First, it concluded that “[a] market should be treated as one sided when the impacts of indirect network effects and relative pricing in that market are minor.”⁵⁹ The Court gave the example of “[n]ewspapers that sell advertisements,” which are “arguably . . . two-sided platform[s],” but observed that the effects of two-sidedness are small in this context.⁶⁰ That conclusion would surprise many economists and experts who write about two-sided markets. Periodicals supported by both reader subscriptions and advertisers are paradigmatic examples of businesses operating in two-sided markets.⁶¹

The *Amex* Court limited its definition of two-sided platforms to those that “facilitate a single, simultaneous transaction between participants.”⁶² In addition to credit-card platforms, that would also include Uber or Airbnb, where transactions between suppliers and customers occur directly on the platform. In these cases, the platform debits the purchaser’s credit card and compensates the supplier after taking out its fee.

The Court’s definition of two-sidedness, however, would not include Google Search, which is supported by advertising but does not feature individual simultaneous transactions between consumers and advertisers. For the same reason, Facebook and other social-networking sites would not be included. Nor would the Court’s definition include media-streaming services such as Netflix or Spotify, where users pay a fixed fee, and that fee does not go directly to licensors.

58. See TESLA, <https://www.tesla.com> [<https://perma.cc/Z28A-GMTK>]. However, Tesla has had some disputes with states whose laws require that a manufacturer’s cars be sold by a car dealer within the state. See Jon Fingas, *Tesla May Open ‘Centers’ to Get Around Pro-Dealership Laws*, ENGADGET (Oct. 12, 2019), <https://www.engadget.com/2019-10-12-tesla-centers-leak.html> [<https://perma.cc/9WQR-UL6N>].

59. *Ohio v. Am. Express Co.*, 138 S. Ct. 2274, 2286 (2018).

60. *Id.*

61. E.g., Argentesi & Filistrucchi, *supra* note 19, at 1247; Ulrich Kaiser & Julian Wright, *Price Structure in Two-Sided Markets: Evidence from the Magazine Industry*, 24 INT’L J. INDUS. ORG. 1, 2 (2006).

62. *Amex*, 138 S. Ct. at 2286.

The Supreme Court's definition would also not include dating services such as Match or OkCupid. In those cases, each side pays the platform a subscription fee,⁶³ but there is no simultaneous one-to-one exchange (i.e., a purchase price) between the two sides.

A definition that regards every digital-sales platform as a two-sided market is inaccurate and unhelpful. But so is the Supreme Court's definition that limits the scope of two-sided markets to platforms that facilitate a simultaneous one-to-one transaction between the parties. A better definition is that a two-sided market is a platform that interacts between at least two groups of interdependent users and profits by determining both the optimal price and the optimal distribution of prices or benefits between the groups. "Interdependent" means that size or volume of business on one side is affected by activity on the other side, and vice versa. As observed by two leading academics whom both the *Amex* majority⁶⁴ and dissent⁶⁵ cited, a two-sided market is "one in which the volume of transactions between end users depends on the structure and not only on the overall level of the fees charged by the platform."⁶⁶

The focus of this Article is on digital-platform monopolies and ways of reining in their market power. The question of two-sidedness will often be relevant, but not always. For example, neither Google Search nor Facebook would satisfy the *Amex* Court's definition of two-sided platforms because they do not involve simultaneous one-to-one transactions between parties on the two sides. Nevertheless, both are clearly two-sided under the criteria that economists generally use to evaluate such markets.

C. Are Platform Markets Winner-Take-All?

A "winner-take-all" market is one in which the equilibrium number of sellers at any time is one. Other markets can accommodate two or more firms, and a single firm can maintain a monopoly position only by competing on the merits or engaging in exclusionary practices. Notwithstanding overwhelming evidence to the contrary, the market for digital platforms is often said to be winner-take-

63. Some dating sites offer a free service with more limited features than the version they charge for. Jonah Engel Bromwich, *Wait, People Pay for Tinder?*, N.Y. TIMES (Aug. 6, 2019), <https://www.nytimes.com/2019/08/06/style/tinder-gold.html> [https://perma.cc/E2T3-YA4C].

64. *Amex*, 138 S. Ct. at 2281.

65. *Id.* at 2300 (Breyer, J., dissenting).

66. Jean-Charles Rochet & Jean Tirole, *Two-Sided Markets: A Progress Report*, 37 RAND J. ECON. 645, 646 (2006).

all.⁶⁷ But this is rarely true. Even assuming that some platforms are winner-take-all, however, the policy consequences are unclear. Some believe that natural monopolies require increased antitrust enforcement because the market itself will not discipline dominant platforms.⁶⁸ Others argue that winner-take-all status calls for less antitrust enforcement because the market is a natural monopoly and thus *should* be served by a single firm. Several older antitrust decisions embraced this view by recognizing a “natural monopoly defense” to antitrust actions.⁶⁹

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67. See, e.g., Daniel A. Hanley, *A Topology of Multisided Digital Platforms*, 19 CONN. PUB. INT. L.J. 271, 289-91 (2020); cf. Thomas R. Eisenmann, *Winner-Take-All in Networked Markets*, HARV. BUS. SCH. 1, 4 (Sept. 11, 2007) (discussing online auction sites); Thomas Noe & Geoffrey Parker, *Winner Take All: Competition, Strategy, and the Structure of Returns in the Internet Economy*, 14 J. ECON. & MGMT. STRATEGY 141, 141-43 (2005) (excluding companies that sell products with a positive marginal cost, such as Amazon, and those “whose value clearly depends upon network externalities,” like eBay). Others are careful to limit the statement to markets subject to indirect network effects. See David S. Evans, *Antitrust Issues Raised by the Emerging Global Internet Economy*, 102 NW. U. L. REV. COLLOQUIY 285, 302 (2008) (arguing that platforms in markets subject to indirect network effects are “competing in winner take all or a few winners take all markets”); Rob Frieden, *The Internet of Platforms and Two-Sided Markets: Implications for Competition and Consumers*, 63 VILL. L. REV. 269, 270-74 (2018); K. Sabeel Rahman, *Regulating Informational Infrastructure: Internet Platforms as the New Public Utilities*, 2 GEO. L. TECH. REV. 234, 240-41 (2018). In the more popular literature, see SCOTT GALLOWAY, *THE FOUR: THE HIDDEN DNA OF AMAZON, APPLE, FACEBOOK, AND GOOGLE* (2017); JONATHAN TAPLIN, *MOVE FAST AND BREAK THINGS: HOW FACEBOOK, GOOGLE, AND AMAZON CORNERED CULTURE AND UNDERMINED DEMOCRACY* 2-10 (2017); and Zeynep Tufekci, *Google Buzz: The Corporation of Social Commons*, TECHNOSOCIOLOGY (Feb. 17, 2010), <http://technosociology.org/?p=102&cpage=1> [<https://perma.cc/GCR3-YVRD>]. See also Jack M. Balkin, *Information Fiduciaries and the First Amendment*, 49 U.C. DAVIS L. REV. 1183, 1187-90 (2016) (describing certain businesses’ dominant control of data); Kristen E. Eichensehr, *Digital Switzerlands*, 167 U. PA. L. REV. 665, 665-67 (2018) (describing the phenomenon of private companies amassing as much power as governments); Ryan Grim, *Steve Bannon Wants Facebook and Google Regulated Like Utilities*, INTERCEPT (July 27, 2017, 12:31 PM), <https://theintercept.com/2017/07/27/steve-bannon-wants-facebook-and-google-regulated-like-utilities> [<https://perma.cc/NMJ5-B788>]. For pushback, see David R. Keith & Hazhir Rahmandad, *Are On-Demand Platforms Winner-Take-All Markets?* (Aug. 1, 2019) (unpublished manuscript), <https://journals.aom.org/doi/pdf/10.5465/AMBPP.2019.150> [<https://perma.cc/W5LJ-BEXN>].
68. Hanley, *supra* note 67, at 272-75, 289-91; *Joint Response to the House Judiciary Committee on the State of Antitrust Law and Implications for Protecting Competition in Digital Markets*, CTR. FOR EQUITABLE GROWTH 3-5 (Apr. 30, 2020), <https://equitablegrowth.org/wp-content/uploads/2020/04/Joint-Response-to-the-House-Judiciary-Committee-on-the-State-of-Antitrust-Law-and-Implications-for-Protecting-Competition-in-Digital-Markets.pdf> [<https://perma.cc/P32V-ZENK>].
69. See, e.g., *Greenville Publ’g Co. v. Daily Reflector, Inc.*, 496 F.2d 391, 397 (4th Cir. 1974) (stating that if the defendant is a natural monopoly, then driving rivals out of the market cannot be unlawful under the antitrust laws); *id.* (“The characteristics of a natural monopoly make it inappropriate to apply the usual rule that success in driving competitors from the market is evidence of illegal monopolization.”); *Union Leader Corp. v. Newspapers of New Eng., Inc.*, 284 F.2d 582, 584 (1st Cir. 1960) (partially recognizing the defense); *City of Cleveland v.*

Under this reasoning, natural-monopoly status may indicate a need for utility-style regulation instead of antitrust enforcement.

Few platforms are natural monopolies. If the market contains room for competition among multiple incumbent firms, regulation is usually a poor alternative.⁷⁰ It rarely comes close to mimicking competitive behavior. Regulation necessarily generalizes and applies the same rules to several firms in an area, while antitrust requires a fact-specific inquiry for each firm. This is particularly important if the firms in question are quite diverse.

Regulation also entrenches existing technologies and, in doing so, bolsters existing incumbents. For example, the Federal Communications Commission's (FCC) longstanding willingness to protect AT&T's dominant position from all rivals very likely held back innovation in telecommunications for decades.⁷¹ Of course, proper regulatory design might mitigate this. But if viable and robust competitive alternatives are available, regulation usually is not the best answer.

While we sometimes use the term "natural monopoly" to describe a firm or a market, natural-monopoly status actually applies to particular inputs or technologies. For example, an electric utility is said to be a natural monopoly because of a particular technology—namely, it transmits power through wires, and the system is most efficient if only a single wire goes to each customer. However, the electric company also generates power, and generation can be structured competitively. It may produce its own fuel through coal mines, oil fields, or wind farms, all of which can be produced under competition.

Even if a digital platform is determined to dominate a winner-take-all, or natural monopoly, market, it is important to distinguish the particular assets and operations that are in fact natural monopolies from those that are not. For example, regardless of whether the Amazon platform is a natural monopoly, most of the things that it sells are not. A well-designed policy will limit the monopoly characterization to those particular inputs to which it applies, leaving other portions of production to competition. To a considerable extent, deregulation has

Cleveland Elec. Illuminating Co., 538 F. Supp. 1306, 1314-15 (N.D. Ohio 1980) (recognizing the defense, though declining to apply it to exculpate these defendants); see also Richard A. Posner, *Natural Monopoly and its Regulation*, 21 STAN. L. REV. 548, 586-87 (1969) (discussing natural monopoly as a merger defense). For a good discussion rejecting the idea of an automatic natural-monopoly defense, see Einer Elhauge, *Defining Better Monopolization Standards*, 56 STAN L. REV. 253, 325-27 (2003).

70. See STEPHEN G. BREYER, *REGULATION AND ITS REFORM* 191-97 (1982).

71. See *infra* note 256 and accompanying text; see also Howard A. Shelanski, *Adjusting Regulation to Competition: Toward a New Model for U.S. Telecommunications Policy*, 24 YALE J. ON REG. 55, 58-60 (2007) (canvassing telecommunications regulation over the past century, with a focus on AT&T). Classic sources include MICHAEL A. CREW & PAUL R. KLEINDORFER, *THE ECONOMICS OF PUBLIC UTILITY REGULATION* 120-24 (1986); and Harvey Averch & Leland L. Johnson, *Behavior of the Firm Under Regulatory Constraint*, 52 AM. ECON. REV. 1052 (1962).

accomplished that task in certain markets, and the same approach should also be applied to platforms.⁷²

If a platform is not a natural monopoly, competition should be both feasible and desirable. It will very likely emerge in the absence of exclusionary practices that can be addressed by antitrust laws.

The fact that the platforms are not natural monopolies also justifies heightened concern for platform acquisitions of nascent firms. New entry should be making these markets more competitive, but systematic acquisition of recent entrants blunts competitive pressure.⁷³

By contrast, if a platform is a natural monopoly, it will be able to maintain its position simply by charging a price that is not excessively above its costs. Even here, however, there are important qualifications. First, competition to be the natural monopolist might exist, and antitrust policy can encourage such competition.⁷⁴ Second, natural-monopoly status is not necessarily permanent. Its duration depends on technology and market size, both of which can change.

Five related factors determine the existence of a natural monopoly. Many of these are exogenous, applying mainly to the market in which a firm operates or to consumer behavior. Some, such as declining costs, are endogenous characteristics of the firm's own choices. The factors are:

1. lack of stable competition or multi-homing among incumbent firms;
2. durability of a dominant position and the ability to accommodate or resist technological change;
3. declining costs or network effects and structure requiring single-firm control;
4. lack of significant product differentiation; and
5. lack of interoperability or data sharing.

1. Stable Competition Among Incumbent Firms: Single- vs. Multi-Homing and Interoperability

Most digital platforms have competitors in at least some of the markets in which they operate. Today, online sellers of all sizes appear everywhere, ranging from single-outlet restaurants to small grocers to online sellers of flowers and to

72. See Joseph D. Kearney & Thomas W. Merrill, *The Great Transformation of Regulated Industries Law*, 98 COLUM. L. REV. 1323, 1324-29 (1998).

73. See *infra* Part III.

74. E.g., Harold Demsetz, *Why Regulate Utilities?*, 11 J.L. & ECON. 55, 57-60 (1968) (arguing that, even if only one firm can ultimately be the seller, firms can bid against one another for that privilege, driving prices to the competitive level).

numerous newspapers, magazines, and other periodicals. Online firms such as Carvana.com compete nationally in the sale of used cars with thousands of small brick-and-mortar dealers, many of whom have an internet presence themselves.⁷⁵ Among the largest online sellers, some also have an even larger brick-and-mortar presence, and typically in highly competitive markets. As of 2020, this was true of seven out of the top ten online sellers of merchandise, including Walmart, Home Depot, Best Buy, Target, and Costco.⁷⁶

Competitive markets change all the time, and the market shares of individual firms fluctuate. Further, markets for new technologies may go through lengthy periods in which multiple technologies compete with one another until a single winner emerges. One well-known example is recordable analog videotape. Sony's Betamax format survived in the market for roughly 25 years until it finally succumbed in a standards battle with VHS tape.⁷⁷ The competition among high-definition digital optical formats, HD DVD and Blu-ray, was much briefer, lasting from 2006 to 2008 until Blu-ray triumphed.⁷⁸ For decades there has been a battle between the dominant architectures of personal computers, Apple Macintosh OS and Microsoft Windows. For several years Apple's iPhone OS has competed with the Android OS for the smartphone market.⁷⁹

75. CARVANA, <https://www.carvana.com> [<https://perma.cc/97RR-PXQD>].

76. See *Top 10 E-Commerce Retailers in the U.S. in 2020*, MKTG. CHARTS (Mar. 2020), <https://www.marketingcharts.com/charts/top-10-e-commerce-retailers-in-the-us-in-2020/attachment/emarketer-top-10-e-commerce-retailers-in-the-us-in-2020-mar2020> [<https://perma.cc/9ZUQ-ADX2>] (listing the ten largest e-commerce retailers in the United States in 2020 in descending order as Amazon, Walmart, eBay, Apple, Home Depot, Wayfair, Best Buy, Target, Costco, and Macy's).

77. Dave Owen, *The Betamax vs. VHS Format War*, MEDIA C. (Jan. 8, 2008), <https://www.mediacollege.com/video/format/compare/1973ikiped-vhs.html> [<https://perma.cc/QN3U-8TWX>].

78. See Ben Drawbaugh, *Two Years of Battle Between HD DVD and Blu-Ray: A Retrospective*, ENGADGET (Feb. 20, 2008), <https://www.engadget.com/2008-02-20-two-years-of-battle-between-hd-dvd-and-blu-ray-a-retrospective.html> [<https://perma.cc/3YR6-LHQX>].

79. See Jignesh Padhiyar, *iPhone vs Android: A Look at Competitive Past and Future*, GEEKSBLOG (July 21, 2020), <https://www.igeeksblog.com/iphone-vs-android> [<https://perma.cc/9J76-DDN4>]. The U.S. market is about evenly split between Android and iOS, but the worldwide market is 87% Android. S. O'Dea, *U.S. Smartphone Subscriber Share by Operating Platform 2012-2020, by Month*, STATISTA (Aug. 17, 2020), <https://www.statista.com/statistics/266572/market-share-held-by-smartphone-platforms-in-the-united-states> [<https://perma.cc/Y3DX-5EBY>]. On worldwide market share, see S. O'Dea, *Global Market Share Smart Phone Operating Systems of Unit Shipments 2014-2023*, STATISTA (Feb. 28, 2020), <https://www.statista.com/statistics/272307/market-share-forecast-for-smartphone-operating-systems> [<https://perma.cc/3WG9-3LCS>].

Some markets go from less to more competitive as a result of technological change. One good example is the telephone industry, discussed below.⁸⁰ Computer hardware is another example. During the heyday of mainframe computers, IBM was the acknowledged leader, with market shares that were sufficient to provoke a high-profile monopolization case.⁸¹ IBM's market share fell precipitously, however, and the industry became much more diverse and competitive. That was not the result of an antitrust decree, as the U.S. case against IBM was dropped.⁸² Rather, it was a consequence of technological changes that IBM itself initiated by adopting an open architecture that provided liberal licensing to others.⁸³

Markets that produce a single winner are generally ones where economies of scale, network effects, or the need for interoperability favor a single format, *and* that format is controlled by a single private entity. That situation is not common. In the video-recording standards battles referenced above, a single standard emerged because interoperability is essential, and the costs of maintaining two different formats were too high. However, the technology for those formats came to be widely shared under agreed-upon technological standards.⁸⁴ The same thing is true of the cellphone market, which is also subject to significant network effects. While the network is unitary, most of the technology is produced by competing firms operating under shared technological standards.⁸⁵ A variation of this structure can also be fashioned as an antitrust remedy for unitary

80. See *infra* note 113 and accompanying text.

81. See *In re IBM Peripheral EDP Devices Antitrust Litig.*, 481 F. Supp. 965, 981 (N.D. Cal. 1979) (calculating the average IBM market share at more than 57% between 1969-1975); cf. Lawrence A. Sullivan, *Monopolization: Corporate Strategy, the IBM Cases, and the Transformation of the Law*, 60 TEX. L. REV. 587, 599 (1982) (noting that IBM's market share was 75% in 1964 and 70% in 1971).

82. Edward T. Pound, *Why Baxter Dropped the I.B.M. Suit*, N.Y. TIMES (Jan. 9, 1982), <https://www.nytimes.com/1982/01/09/business/why-baxter-dropped-the-ibm-suit.html> [<https://perma.cc/3KUL-N2YB>].

83. See Joseph Farrell & Philip J. Weiser, *Modularity, Vertical Integration, and Open Access Policies: Towards a Convergence of Antitrust and Regulation in the Internet Age*, 17 HARV. J.L. & TECH. 85, 92-93 (2003); Christopher S. Yoo, *Modularity Theory and Internet Regulation*, 2016 U. ILL. L. REV. 1, 59; Michael Miller, *Why the IBM PC Had an Open Architecture*, PCMag UK (Aug. 9, 2011, 1:59 AM), <https://uk.pcmag.com/opinion/111663/why-the-ibm-pc-had-an-open-architecture> [<https://perma.cc/EW3D-JZRR>].

84. Cf. *Optical Disc Standards*, INT'L ASS'N SOUND & AUDIOVISUAL ARCHIVES (2009), <https://www.iasa-web.org/tco4/recordable-optical-disc-standards> [<https://perma.cc/6RBH-F7D8>] (summarizing standards).

85. See Hans van der Veer & Anthony Wiles, *Achieving Technical Interoperability—The ETSI Approach*, EUR. TELECOMM. STANDARDS INST. (Apr. 2008), <https://portal.etsi.org/CTI/Downloads/ETSIApproach/IOP%20whitepaper%20Edition%203%20of%20final.pdf> [<https://perma.cc/33JD-TZBN>]; ETSI, <https://www.etsi.org> [<https://perma.cc/SH4F-754D>].

platforms such as Amazon.⁸⁶ The result can be robust competition while still preserving all of the economies of scale and scope that an integrated platform can offer.

Features that make the emergence or maintenance of a single technology winner less likely include interoperability or pooling of essential information or data.⁸⁷ Androids, iPhones, and other cellular phones interconnect, enabling users to engage in a full range of communications with one another.⁸⁸ The major wireless carriers all sell and support both Apple and Android phones on the same network. Most retailers who are not owned by or have exclusive-dealing agreements with a particular brand sell both.⁸⁹ In video games, many are sold in multiple formats that can be played by people with different game consoles.⁹⁰ Whether a winner-take-all standard even exists depends on limitations on the ability of buyers to switch back and forth between standards or sellers to supply goods that satisfy multiple standards.

One reason a single victor might emerge in a standards battle is that the market favors single-homing. Single-homing occurs when users of a certain technology make one choice to the exclusion of others. This occurs because the marginal cost of using two competing products is greater than the benefits. For example, a person might carry one cellphone but multiple credit cards. Carrying a second working cellphone is costly, and the benefits are minor or perhaps even nonexistent. By contrast, the marginal cost to most people of carrying an additional credit card is close to zero, while different cards provide different benefits, such as being accepted by different stores. Further, multiple cards enable people to carry more debt or stagger out their payments. In short, the cards function as both complements and substitutes. People might also download apps for both Uber and Lyft, which are competing ride-hailing services. The marginal cost of installing and maintaining an app on one's phone is zero, and at any given time a driver may be more readily available on one of them or may have a more favorable price. Alternatively, some cities may have greater availability of one provider

86. See *infra* text accompanying notes 347-357.

87. On using antitrust to compel interoperability, see *infra* notes 367-377 and accompanying text.

88. There are a few exceptions. For example, Apple's iMessage functionality is available only on Apple devices. *Use Messages with Your Mac*, APPLE (Oct. 18, 2019), <https://support.apple.com/en-us/HT202549> [<https://perma.cc/658H-BJHE>] ("With Messages for Mac, you can send unlimited messages to any Mac, iPhone, iPad, or iPod touch that uses iMessage, Apple's secure-messaging service.").

89. See, e.g., *All Smartphones*, VERIZON, <https://www.verizon.com/smartphones> [<https://perma.cc/7BXR-TGWQ>] (offering a wide variety of both Apple and Android phones on the same wireless plans).

90. See Vardit Landsman & Stefan Stremersch, *Multihoming in Two-Sided Markets: An Empirical Inquiry in the Video Game Console Industry*, 75 J. MARKETING 39, 40 (2011).

than the other. Consumer preference for multi-homing tends to permit more competition.

Some customers also engage in multi-homing between a digital platform and a traditional market. For example, many people who carry multiple credit cards might sometimes use cash or write a check to make a purchase. Or their smartphones might contain apps for both Uber and Lyft, but they will also sometimes hail a traditional cab. That is also true of customers who sometimes purchase groceries on the Amazon-Whole Foods digital platform, but other times visit a traditional grocery store. The Supreme Court's conclusion in *Amex* that digital platforms and other markets do not compete with one another as a matter of law ignored these realities,⁹¹ and the issue was never even briefed or argued. If *Amex* is taken seriously on this question, it could make factual analysis of market power in digital-platform markets impossible.

In other markets, users prefer to single-home. VHS in analog video media and Blu-ray in digital ended up as dominant platforms because most users single-homed; they did not want to deal with two different formats simultaneously.⁹²

Single-homing does not foreclose competition in a market, but rather dictates that firms must compete against each other to be a particular user's exclusive choice. Single-homing can be sequential, as when someone picks a single technology for one time period, and then switches to another later on. For example, when a customer's iPhone breaks, she might switch to an Android phone, or vice versa. However, *within* periods of ownership, she is likely to use one at a time.

Finally, some single-homing may result from contractual restraints that prevent multi-homing. One contributor to the end of the Blu-ray/HD DVD battle was hardware manufacturers' payments to studios for movies to be released exclusively in a single format. Both competitors made such payments, but Sony was ultimately more successful in buying exclusivity for its Blu-ray format.⁹³ Video-game console makers and others have also used exclusivity agreements to

91. *Ohio v. Am. Express Co.*, 138 S. Ct. 2274, 2287 (2018) ("Only other two-sided platforms can compete with a two-sided platform for transactions.").

92. *See Consumers More Aware of HD-DVD over Blu-ray Disc*, CHAIN STORE AGE (Sept. 20, 2007), <https://chainstoreage.com/news/consumers-more-aware-hd-dvd-over-blu-ray-disc> [<https://perma.cc/7Q4U-9724>]; Drawbaugh, *supra* note 78.

93. *See* Brooks Barnes, *Warner Backs Blu-ray, Tilting DVD Battle*, N.Y. TIMES (Jan. 5, 2008), <https://www.nytimes.com/2008/01/05/technology/05disc.html> [<https://perma.cc/9TQV-QS72>]. For a recounting of the battle over exclusivity payments, see Kevin L. Spark, *Format War, Antitrust Casualties: The Sherman Act and the Blu-ray—HD DVD Format War*, 83 S. CAL. L. REV. 173, 174-76 (2009).

induce single-homing.⁹⁴ The payments themselves could be subject to antitrust rules governing exclusive dealing, which condemn anticompetitive agreements that involve paying for exclusive rights.⁹⁵ For example, DOJ's recent antitrust complaint against Google alleges that Google paid Apple large sums to make Google Search the default search engine on iPhones.⁹⁶ Similarly, the FTC's recent complaint against Facebook alleges that Facebook conditioned third-party app developers' interconnection to Facebook on their not interconnecting with competing social networks, thus making it more difficult for users to switch back and forth.⁹⁷

While widespread availability of multi-homing makes natural-monopoly status less likely, it may not rule it out. Google Search is one example of a technology that has maintained dominance even though multi-homing of search engines is almost universally available.⁹⁸ Device users are all able to install multiple free search engines and switch quickly among them. Yet Google retains a dominant market share.⁹⁹ This could be a result of endogenous cost or product advantages. Quite plausibly, however, it is also a consequence of successful exclusionary practices.¹⁰⁰

94. See Robin S. Lee, *Vertical Integration and Exclusivity in Platform and Two-Sided Markets*, 103 AM. ECON. REV. 2960, 2965 (2013); see also Elias Carroni, Leonardo Madio & Shiva Shekhar, *Superstar Exclusivity in Two-Sided Markets* 3, 8-9, app'x at 2 tbls.1, 3 (Jan. 2021) (unpublished manuscript), <https://ssrn.com/abstract=3243777> [<https://perma.cc/Q5TQ-CB42-ZVNJ>] (discussing and providing tables of exclusivity agreements in video games and other platforms).

95. See AREEDA & HOVENKAMP, *supra* note 9, ¶ 1800.

96. Complaint ¶ 45, *United States v. Google LLC*, No.1:20-cv-03010 (D.D.C. Oct. 20, 2020) [hereinafter *United States Google Compl.*]; cf. *Colorado Google Compl.*, *supra* note 28, ¶¶ 123-24 (alleging advertising-revenue sharing with Android device manufacturers in exchange for preferencing and defaults of Google products); *id.* ¶¶ 137-43 (alleging similar claims, such as in the licensing of voice-assisted technology to automobiles).

97. *FTC Facebook Compl.*, *supra* note 33, ¶¶ 23, 136-37, 141, 143 (alleging that Facebook provided application developers with access to Facebook's application program interfaces (APIs) on the condition that their own apps not compete with Facebook or interact with Facebook competitors). An API is a digital access point where another entity can interconnect with a firm's program. The complaint acknowledges that Facebook has suspended at least some of the allegedly anticompetitive policies in response to anticipated antitrust scrutiny, but it alleges that Facebook is likely to reinstitute these policies if antitrust scrutiny passes. See *id.* ¶ 149.

98. See *United States Google Compl.*, *supra* note 96, ¶ 93 (alleging that Google's search-market share is around 90%).

99. See *infra* notes 143-157 and accompanying text.

100. At least one of the complaints against Google alleges as much. See *Colorado Google Compl.*, *supra* note 28, ¶¶ 36-37 (alleging that Google needs exclusionary practices in order to maintain its dominance).

2. *Durable Dominant Positions: Entry Barriers, No-Fault Monopoly, and Exclusionary Practices*

There is little empirical support for the proposition that digital-platform markets are winner-take-all. Rather, the landscape for digital markets resembles the one for markets generally: some of them are more conducive to single-firm dominance than others. Some resemble markets with a dominant firm plus a competitive fringe.¹⁰¹ Others enjoy competition among more evenly sized rivals. One question that is central to market structure is the prospect of new entry.

Determining the existence, extent, and relevance of entry barriers in an antitrust case has always been a highly factual inquiry.¹⁰² For digital platforms, several factors point in different directions, making categorical treatment impossible. On the one hand, network effects can be a substantial entry barrier. Particularly in markets where significant product differentiation is impossible, a large base on one or both sides of a platform, which places newcomers at a significant disadvantage, can be a powerful entry deterrent. The same thing can be said of accumulation of large amounts of consumer data or large intellectual-property portfolios. Offsetting these barriers are low consumer-switching costs and widespread multi-homing, which are common in platform markets; these factors, in contrast, encourage new entry. Product differentiation is also an avenue for new entry, as is high technological turnover.¹⁰³

The concerns about entry are similar for merger policy, where the government has given policy guidance. The 2010 Horizontal Merger Guidelines employed by the antitrust-enforcement agencies indicate that a facially anticompetitive merger may not be worth pursuing if new entry would be sufficiently rapid so as to make anticompetitive effects from the merger unlikely.¹⁰⁴ The evidence must show that new entry would keep prices sufficiently low so that consumers

101. See DON E. WALDMAN & ELIZABETH J. JENSEN, *INDUSTRIAL ORGANIZATION: THEORY AND PRACTICE* 190-210 (5th ed. 2019) (describing such markets).

102. See AREEDA & HOVENKAMP, *supra* note 9, ¶¶ 420-23.

103. See Daniel L. Rubinfeld & Michal S. Gal, *Access Barriers to Big Data*, 59 ARIZ. L. REV. 339, 350-68 (2017) (arguing that entry barriers into platforms characterized by collection or use of big data are high). *But see* D. Daniel Sokol & Jingyuan (Mary) Ma, *Understanding Online Markets and Antitrust Analysis*, 15 NW. J. TECH. & INTELL. PROP. 43, 48-50 (2017) (arguing that entry barriers are low in most online markets). In the middle is Marina Lao, *No-Fault Digital Platform Monopolization*, 61 WM. & MARY L. REV. 755, 778-79 (2020), which argues that it is difficult to “categorically characterize the competitive effects of big data as either procompetitive or anticompetitive.”

104. U.S. DEP’T OF JUST. & FED. TRADE COMM’N, *HORIZONTAL MERGER GUIDELINES* § 9.1 (Aug. 19, 2010), <https://www.justice.gov/atr/horizontal-merger-guidelines-08192010> [<https://perma.cc/2XCU-K5RK>].

would not be significantly harmed by the merger.¹⁰⁵ Older versions of the Merger Guidelines were more explicit about the time frame. For example, the 1992 Horizontal Merger Guidelines concluded that the agencies would not challenge a merger if new entry sufficient to return prices to premerger levels would be likely to occur within two years.¹⁰⁶

In addition to requiring high entry barriers, U.S. antitrust law refuses to condemn a dominant firm except on proof of one or more anticompetitive practices. We do not condemn monopoly “without fault.” Writing in the late 1970s, Phillip Areeda and Donald Turner concluded that persistent monopoly was a serious problem. They would have permitted the government (but not private parties) to bring equitable challenges to break up monopolies without proof of fault, provided that the monopoly had persisted for at least five years.¹⁰⁷

One explanation for durable monopoly is that the market is winner-take-all, which means that we would naturally expect it to be controlled by a single firm. As a result, a defense that a market is a natural monopoly would be necessary in a regime that condemned monopoly without fault. Otherwise, the antitrust laws might needlessly break up dominant firms in markets that are unable to achieve a multi-firm equilibrium. That would lead to costly price wars or collusion because fierce competition in natural-monopoly markets is not sustainable.

By contrast, if a market is not a natural monopoly, then the emergence of a dominant firm requires exclusionary practices, superior management, good luck (or bad luck for rivals), or collusion. As the Supreme Court put it more than a century ago in *Standard Oil Co. v. United States*, “monopoly would be inevitably

105. *Id.*

106. U.S. DEP’T JUST. & FED. TRADE COMM’N, 1992 MERGER GUIDELINES § 3.2 (1992), <https://www.justice.gov/sites/default/files/atr/legacy/2007/07/11/11250.pdf> [<https://perma.cc/4W8E-PRGK>].

107. See 3 PHILLIP AREEDA & DONALD F. TURNER, ANTITRUST LAW ¶¶ 620-23 (1978) (proposing a no-fault monopolization rule). Areeda and Turner relied on Turner’s own earlier work, plus work by Oliver E. Williamson. See Donald F. Turner, *The Scope of Antitrust and Other Economic Regulatory Policies*, 82 HARV. L. REV. 1207, 1225 (1969) (“[S]ection 2 of the Sherman Act [should] apply to monopoly power that has been persistently maintained over a substantial period of time, except where based solely on economies of scale or where it arose out of and still depends upon the same unexpired patents.”); Oliver E. Williamson, *Dominant Firms and the Monopoly Problem: Market Failure Considerations*, 85 HARV. L. REV. 1512, 1527 (1972) (arguing that a duration of five years should be long enough to suggest that a monopoly is not the result of luck or chance). For commentary, see generally Robert H. Lande & Richard O. Zerbo, *The Sherman Act Is a No-Fault Monopolization Statute: A Textualist Demonstration*, 70 AM. U. L. REV. 497 (2020); and Marina Lao, *No-Fault Digital Platform Monopolization*, 61 WM. & MARY L. REV. 755 (2020). European Union (EU) law and that of many other jurisdictions require “abuse” of a dominant position, apparently ruling out no-fault monopoly claims. The current edition of *Antitrust Law* leaves Areeda and Turner’s no-fault monopoly proposal intact and adds my own critique. See AREEDA & HOVENKAMP, *supra* note 9, ¶¶ 630-38.

prevented if no extraneous or sovereign power imposed it and no right to make unlawful contracts having a monopolistic tendency were permitted.”¹⁰⁸

In a stable natural-monopoly market, a dominant firm need do no more than charge a competitive price in order to exclude rivals, or perhaps occasionally defend itself against an attack from someone else.¹⁰⁹ In the absence of exclusionary practices the market will determine how many firms the market will contain. As a result, a requirement of exclusionary practices makes it unnecessary to decide whether a market is a natural monopoly.

The persistent presence of exclusionary practices indicates that a market is not a natural monopoly. This is very likely the case with respect to both Google Search and Facebook, who are currently facing numerous antitrust actions from both the federal agencies and state attorneys general.¹¹⁰ These complaints allege several exclusionary practices. One implication from these allegations is that Google is not a natural monopoly. If it really were, then Google would not need to pay Apple several billions per year to make its product the default search engine on iPhones. Nor would it need to enter into contracts with various business partners requiring them to favor Google Search.

On dealing with the problem of durable monopoly, we could take several approaches. First, we could condemn a relatively durable monopoly without proof of fault but then permit a defense that the market is in fact a natural monopoly. Or perhaps we could state a presumption that if a monopoly has prevailed in a market for a certain number of years, then it warrants condemnation. The defendant could defeat the presumption by showing natural monopoly or other factors that forced the defendant to be a monopolist.¹¹¹ This was the gist of Judge Wyzanski’s famous mid-twentieth-century discussion of Judge Hand’s position in the *Alcoa* case.¹¹² Finally, we could take the approach that we actually do, which is to require proof of exclusionary practices and condemn the monopoly without determining whether the market in question contains room for only one efficient firm.

We insist on proving exclusionary practices in part because often we do not know why a particular market has a dominant firm. Perhaps the market naturally gravitates toward natural monopoly, or perhaps dominance results from

108. 221 U.S. 1, 62 (1911).

109. See *Union Leader Corp. v. Newspapers of New Eng., Inc.*, 284 F.2d 582, 587 (1st Cir. 1960) (“We do not think the fact that competition is in a natural monopoly climate can limit a defendant’s right to defend itself.”).

110. See *supra* notes 28, 33 and accompanying text.

111. See, e.g., *United States v. Aluminum Co. of Am. (Alcoa)*, 148 F.2d 416, 429 (2d Cir. 1945) (“[M]onopoly may have been thrust upon it.”).

112. See *United States v. United Shoe Mach. Corp.*, 110 F. Supp. 295, 341–42 (D. Mass. 1953) (discussing *Alcoa*, 148 F.2d at 427).

exclusionary practices or some transient fortuity. In any event, even natural-monopoly status does not excuse exclusionary practices. The telephone industry is a good example of a market that went from natural monopoly to competitively structured as long lines gave way to wireless alternatives. The breakup resulted after AT&T was held liable for employing exclusionary practices to maintain its monopoly even after competition had become sustainable.¹¹³

Historically, most firms eventually lose their dominant status. The federal courts confronted the issue of monopoly durability already in 1916, in *United States v. American Can Co.*¹¹⁴ Having acquired what it thought to be a dominant position, American Can raised its prices so much that it induced new entry by many firms, even those with obsolete technology.¹¹⁵ By the time of the decision, the defendant's market share was already rapidly declining.

During the Great Depression, the monopoly that captured Congress's attention and prompted the passage of the Robinson-Patman Act¹¹⁶ was the Great Atlantic & Pacific Tea Company (A&P), a large chain store that put many small grocers out of business. For decades, A&P was the largest grocer in the United States.¹¹⁷ In 1929, it was by far the largest American retailer of any kind, two and a half times larger than Sears, the second largest.¹¹⁸

Today, the leader is Walmart, followed by Kroger. A&P went bankrupt in 2015 and sold most of its stores to other grocers. Sears filed for bankruptcy in 2018. None of the top ten firms in the United States in 1929 is in the top ten today, and many no longer exist.¹¹⁹

Why firms lose dominance is a complex question, and there is no single answer. Some losses are the result of nothing more complicated than the expiration of market-dominating patents. This was largely the story of Xerox, which came

113. See *infra* note 256 and accompanying text.

114. 230 F. 859, 879 (D. Md. 1916).

115. See *id.* ("[P]rices were put up to a point which made it apparently profitable for outsiders to start making cans with any antiquated or crude machinery they could find in old lumber rooms . . .").

116. 15 U.S.C. § 13 (2018).

117. See MARC LEVINSON, *THE GREAT A&P AND THE STRUGGLE FOR SMALL BUSINESS IN AMERICA* 69, 112–14 (2011).

118. *Id.* at 113 (ranking the ten largest retailers in 1929, in descending order, as A&P, Sears, F.W. Woolworth, Montgomery Ward, Kroger, Safeway, J.C. Penney, S.S. Kresge, American Stores, and Gimbel Brothers).

119. See *The Top 10*, *FORTUNE* 500 (2019), <https://fortune.com/fortune500/2019> [<https://perma.cc/62EP-XQ58>].

into existence through the acquisition of a patent portfolio that covered plain paper copying and then gradually lost its position when its patents expired.¹²⁰

A few losses of dominance were the result of antitrust decrees. Likely examples are Standard Oil, Alcoa, and United Shoe Machinery (USM). The antitrust decree in *Standard Oil* broke that company into thirty-four smaller firms.¹²¹ Alcoa was never broken up, but part of the antitrust decree against it was that the firm was forbidden from bidding on two very large government-owned aluminum plants that were sold after World War II. The winning bidders, Kaiser and Reynolds, emerged as significant competitors.¹²² In the prolonged *United Shoe Machinery* litigation, which stretched from the 1910s to the 1960s,¹²³ the district court initially condemned the defendant of monopolization but refused to break it up, largely because it operated out of a single plant.¹²⁴ A decade and a half later, however, the Supreme Court ordered a partial divestiture.¹²⁵ In 1949, USM held roughly 90% of the market for shoe-making machinery.¹²⁶ Subsequently, the market for stitched leather shoes went into sharp decline, and USM lost more than a third of its market share.¹²⁷

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120. Xerox's strategy was recounted first in *SCM Corp. v. Xerox Corp.*, 463 F. Supp. 983, 986-87 (D. Conn. 1978) (describing Xerox's strategy of buying up all patents relevant to plain paper copying); and again in *SCM Corp. v. Xerox Corp.*, 645 F.2d 1195, 1197 (2d Cir. 1981). See also R. Cross & A. Iqbal, *The Rank Xerox Experience: Benchmarking Ten Years On*, in *BENCHMARKING—THEORY AND PRACTICE* 3 (Asbjørn Rolstadås ed., 1995) (describing Xerox's difficulties competing against its Japanese rivals when its patents expired).
 121. See William E. Kovacic, *Designing Antitrust Remedies for Dominant Firm Misconduct*, 31 CONN. L. REV. 1285, 1295 n.46 (1999); Briscoe Ctr. for Am. History, *ExxonMobil Historical Collection, 1790-2014*, U. TEX. AUSTIN, <https://legacy.lib.utexas.edu/taro/utcah/00352/cah-00352.html> [<https://perma.cc/NCS5-BWTQ>] ("In May 1911, after years of legal proceedings, the United States Supreme Court declared Standard Oil Company of New Jersey an 'unreasonable' monopoly and ordered it to dissolve, resulting in 34 distinct and separate companies.").
 122. See 2 SIMON N. WHITNEY, *ANTITRUST POLICIES: AMERICAN EXPERIENCE IN TWENTY INDUSTRIES* 97-98 (1958); Spencer Weber Waller, *The Past, Present, and Future of Monopolization Remedies*, 76 ANTITRUST L.J. 11, 16-17 (2009).
 123. See, e.g., *United States v. United Shoe Mach. Co.*, 247 U.S. 32 (1918); *United States v. Winslow*, 227 U.S. 202 (1913). The earliest decisions were in the state courts. E.g., *United Shoe Mach. Co. v. Kimball*, 79 N.E. 790, 791-92 (Mass. 1907) (assessing whether an exclusive-dealing contract was a reasonable restraint).
 124. *United States v. United Shoe Mach. Corp.*, 110 F. Supp. 295, 351 (D. Mass. 1953), *aff'd*, 347 U.S. 521 (1954); see CARL KAYSEN, *UNITED STATES V. UNITED SHOE MACHINERY CORPORATION: AN ECONOMIC ANALYSIS OF AN ANTI-TRUST CASE* 272-75 (1956).
 125. *United States v. United Shoe Mach. Corp.* 391 U.S. 244, 251 (1968).
 126. See KAYSEN, *supra* note 124, at 52-53.
 127. See Scott E. Masten & Edward A. Snyder, *United States Versus United Shoe Machinery Corporation: On the Merits*, 36 J.L. & ECON. 33, 66-67 (1993).

Durable monopolies are sometimes brought to an end by technological change. One example is Kodak, a storied monopolist for nearly a century. First condemned by the antitrust laws in the 1910s,¹²⁸ Kodak was described by the Second Circuit in 1979 as a “titan in its field.”¹²⁹ For the twenty-seven years before 1979, its share of the film market had been 82% or greater.¹³⁰ Its share of amateur still cameras ranged from 61% in the 1950s to as high as 90% in the mid-sixties.¹³¹ In 2012, however, Kodak declared bankruptcy, for reasons that had little to do with antitrust law. Rather, the problem was its own excessive path dependence in the face of massive technological change: the new technology was digital photography, which was radically different from chemical-film technology in nearly every way. Ironically, Kodak had been a pioneer in digital photography and developed many of the early patents. However, it had far too much invested in the older technology and failed to foresee digital technology’s promise. As a result, it put too many resources into shoring up film photography – a dying enterprise – and entered the digital era with too little, too late.¹³²

The story of Microsoft and the rise of the consumer internet is vaguely similar, although Microsoft has managed to continue prospering.¹³³ Thanks to IBM’s open-source model, most aspects of the hardware market had become competitive, and software was increasingly competitive as well. In the middle, however, was the operating system. Under Bill Gates, Microsoft had developed a computer architecture in which the OS, Microsoft Windows, resided on each computer and acted as a gateway through which all applications and traffic passed.¹³⁴ At the same time, Microsoft contemplated a model in which processing and data were largely local and communication was merely an add-on.

Netscape’s internet-centric approach was a serious threat to this model. As Gates wrote in a famous email to his employees entitled “The Internet Tidal

128. See *Loeb v. Eastman Kodak Co.*, 183 F. 704, 711 (3d Cir. 1910) (sustaining an antitrust complaint against a motion to dismiss); *United States v. Eastman Kodak Co.*, 226 F. 62, 81 (W.D.N.Y. 1915) (condemning multiple mergers of small firms, as well as quasi-exclusive dealing).

129. *Berkey Photo, Inc. v. Eastman Kodak Co.*, 603 F.2d 263, 271 (2d Cir. 1979).

130. *Id.* at 269-70.

131. *Id.*

132. See Elliot Brown, Ben Hattenbach & Ian Washburn, *From Camera Obscura to Camera Futura: How Patents Shaped Two Centuries of Photographic Innovation and Competition*, 98 J. PAT. & TRADEMARK OFF. SOC’Y 406, 436 (2016).

133. See *United States v. Microsoft Corp.*, 253 F.3d 34 (D.C. Cir. 2001).

134. For good analyses, see ANDREW I. GAVIL & HARRY FIRST, *THE MICROSOFT ANTITRUST CASES: COMPETITION POLICY FOR THE TWENTY-FIRST CENTURY* (2014); and WILLIAM H. PAGE & JOHN E. LOPATKA, *THE MICROSOFT CASE: ANTITRUST, HIGH TECHNOLOGY, AND CONSUMER WELFARE* (2007).

Wave,” Netscape was in the process of developing a “multi-platform strategy” of moving the operating-system functions into the diverse applications themselves and thus “commoditiz[ing] the underlying operating system.”¹³⁵ Microsoft then undertook a number of actions intended to suppress Netscape and perpetuate Windows’s dominance.

Gates’s purpose was to protect the Windows OS. Monopoly maintenance of Windows was the core of the government’s case. But the real threat to Microsoft came from the internet browser. In fact, it was the browser, not the OS, that subsequently became commoditized. While Microsoft continues to hold a large share of a differentiated OS market, it has been relegated to a bit player in the browser market.¹³⁶ In part, that was a result of the *Microsoft* decree, which enjoined several exclusive agreements that favored Internet Explorer over Netscape. This outcome also resulted in part from the dramatic rise of broadband, as well as the emergence of high-quality alternative browsers.

Overall, the history of digital-platform monopolies is not distinctive from that of other industries. While the dataset is smaller, no evidence suggests that digital monopolies are more resistant to competition, or that their life is longer than the life of more traditional manufacturing monopolies.

Here, as in traditional markets, the accounts vary from one firm to another. Microsoft, founded in 1975, lost much of a government-brought antitrust challenge to monopoly maintenance in the Windows OS, where it was dominant.¹³⁷ At the time, Microsoft’s Windows OS had a market share of greater than 95% for Intel-based (i.e., “IBM-compatible”) computers.¹³⁸ The Apple OS, which was not Intel-based, was excluded from that market definition. Today Microsoft’s market share is about 76% in a market that includes the Apple OS.¹³⁹ One explanation for the change in market definition was that in 2001 Microsoft Windows ran mainly on Intel processing chips or lookalikes, while Apple machines ran on Motorola chips. In 2006, Apple switched to Intel chips, giving the two systems a more similar architecture, and thus more readily enabling software

135. Email from Bill Gates, CEO, Microsoft Corp., to Executive Staff & Direct Reports (May 26, 1995), <https://lettersofnote.com/2011/07/22/the-internet-tidal-wave> [https://perma.cc/D85V-WTHX]. The email was part of the record in *Microsoft*, 253 F.3d 34.

136. See Ben Schoon, *Microsoft Continues to Gain an Edge in the Browser Wars as It Builds More Market Share*, 9TO5GOOGLE (Nov. 2, 2020, 9:11 AM PT), <https://9to5google.com/2020/11/02/microsoft-edge-market-share-2020-gain/#more-387510> [https://perma.cc/HN3K-YUHA]; *infra* text accompanying note 148.

137. *Microsoft*, 253 F.3d at 117-19.

138. *Id.* at 51.

139. See *Desktop Operating System Market Share Worldwide*, STATCOUNTER, <https://gs.statcounter.com/os-market-share/desktop/worldwide> [https://perma.cc/F47B-RT5B].

to run on both.¹⁴⁰ If Apple's OS is subtracted, Microsoft's market share today would still be about 97%,¹⁴¹ roughly the same as it was during the litigation. Microsoft's OS business must be counted as one of the most durable of platform technologies. Whether it is a natural monopoly is doubtful. More likely, it is simply one alternative in a product-differentiated OS market that includes the Apple OS, the Chrome OS, and systems for small devices.¹⁴²

The story for Microsoft's internet browser is different. Interestingly, the *Microsoft* antitrust litigation was centered on dominance of the OS market, and many of the government's claims involved Microsoft's conduct to commercially advantage its web browser, Internet Explorer. Microsoft "tied" Windows and Internet Explorer by requiring purchasers of Windows to take the browser as well.¹⁴³ Later on, it comingled Internet Explorer's code into the Windows OS code, where it resides to this day.¹⁴⁴ It also imposed various restrictions on both original equipment manufacturers (OEMs) and application writers, requiring them to use exclusively or at least favor Internet Explorer.¹⁴⁵ One result of this conduct was that Microsoft's browser market share during the litigation period rose from about 5% to about 50%; most of this rise was at Netscape's expense.¹⁴⁶

140. See Press Release, Apple, Apple to Use Intel Microprocessors Beginning in 2006 (June 6, 2005), <https://www.apple.com/newsroom/2005/06/06Apple-to-Use-Intel-Microprocessors-Beginning-in-2006> [<https://perma.cc/ZCN2-M6YC>].

141. Schoon, *supra* note 136.

142. Indeed, at this writing, Apple is again switching chips, this time to ones that it manufactures itself. See Brian Heater, *Apple Is Building Its Own Processors for Future Macs*, TECHCRUNCH (June 22, 2020), <https://techcrunch.com/2020/06/22/apple-is-building-its-own-processor-s-for-future-macs> [<https://perma.cc/VE5K-Q74A>].

143. Herbert Hovenkamp, *IP Ties and Microsoft's Rule of Reason*, 47 ANTITRUST BULL. 369, 376 (2002). For a good history of the antitrust litigation, see GAVIL & FIRST, *supra* note 134.

144. *United States v. Microsoft Corp.*, 253 F.3d 34, 66 (D.C. Cir. 2001). In 2015, Microsoft switched to Edge, a browser that is now based on the Chromium engine developed by Google. On the D.C. Circuit's treatment of the technically complex comingling issue, see *id.* at 65-68.

145. Windows 98 launched Internet Explorer in certain situations, even if Netscape Navigator was set as the computer's default browser. Microsoft prohibited OEMs from modifying the Windows boot sequence, thus making it difficult for OEMs to promote Netscape products over the prominent Internet Explorer features. Microsoft also prevented OEMs from removing programs from the Start menu. See *United States v. Microsoft Corp.*, 84 F. Supp. 2d 9, 62-64 (D.D.C. 1999).

146. See *id.* at 101-02. That number was too small to support a monopolization claim, but the government did bring a claim of attempt to monopolize the browser market. The D.C. Circuit dismissed the attempt claim, however, after finding that the browser market was too ambiguously defined. *Microsoft*, 253 F.3d at 82-84.

Today, Google Chrome is the clear leader—with 60%-70% of user market share—followed by Apple's Safari and then Mozilla Firefox.¹⁴⁷ Over the last decade Microsoft has had two browser products: Edge, its current browser, and Internet Explorer, which is virtually phased out. Microsoft's current market share is in the 3%-5% range.¹⁴⁸

So ironically, Microsoft largely retained its market position in the OS market, where it lost the antitrust litigation, but lost market share in the browser market, where it won. Part of the reason for Microsoft's browser share loss may have been injunctive relief from the various exclusionary contracts that the *Microsoft* decision condemned. But the expanding availability of broadband, rapid expansion of free open-source alternatives Chrome and Mozilla, and Apple's own entry in 2003 with Safari were likely key external forces that curtailed Microsoft's browser market share.¹⁴⁹ In the end, the most likely explanation for these shifts in market share is consumer preference facilitated by defaults, low switching costs and multi-homing practices. Indeed, browsers are free, and new ones can be installed in a matter of minutes. Browsers are also readily susceptible to multi-homing; users can have multiple browsers installed on both computers and smartphones.

The story for social-networking platforms differs in many respects. MySpace launched in 2003, and by 2007 writers expressed concern that MySpace was destined to become a permanent natural monopoly.¹⁵⁰ That literature largely

147. United States Google Compl., *supra* note 96, ¶ 49 (alleging that Chrome has a 60% market share). See also StatCounter GlobalStats, which monitors worldwide and locational shares based on page views and segregates them by platforms. Worldwide on all platforms, the shares are Chrome, 63.63%; Safari, 19.37%; Firefox 3.65% . . . Edge, 3.24%. For the United States, the shares are Chrome, 46%; Safari, 38.7%; Edge, 5.24%. The difference between U.S. and worldwide figures is accounted for mainly by the fact that the iPhone, which runs Safari, is much more popular in the United States than elsewhere. *Browser Market Share United States of America*, STATCOUNTER (Jan. 2021), <https://gs.statcounter.com/browser-market-share/all/united-states-of-america> [<https://perma.cc/HEX4-LSRZ>].

148. See *Browser Market Share United States of America*, *supra* note 147; Schoon, *supra* note 136. Chrome and Edge are based on the same open-source Chromium engine, which is a Google project, and Edge's recent growth seems to be coming from Chrome. See Mike Moore, *Millions of People Are Still Using Internet Explorer for Some Reason*, TECHRADAR PRO (Nov. 2, 2020), <https://global.techradar.com/en-za/news/watch-out-chrome-microsoft-edge-just-hit-an-important-landmark> [<https://perma.cc/S4SS-L2EW>].

149. *Apple Releases Safari 1.0*, APPLE (June 23, 2003), <https://www.apple.com/newsroom/2003/06/23Apple-Releases-Safari-1-0> [<https://perma.cc/9JKZ-A9BM>].

150. Victor Keegan, *Will MySpace Ever Lose Its Monopoly?*, GUARDIAN (Feb. 8, 2007, 7:41 AM ET), <https://www.theguardian.com/technology/2007/feb/08/business.comment> [<https://perma.cc/HA3C-45NK>] (not mentioning Facebook); see also John Barrett, *MySpace Is a Natural Monopoly*, TECHNEWSWORLD (Jan. 17, 2007, 4:00 AM PT), <https://www.technewsworld.com/story/55185.html> [<https://perma.cc/89YB-9N6A>] (predicting that MySpace would likely be the “only [social-networking] site of significance” and that competitors would be “condemned to niche markets and subsets”).

ignored Facebook, which had launched in 2004.¹⁵¹ By 2008, Facebook had overtaken MySpace in popularity.¹⁵²

Today, according to the FTC's 2020 complaint, Facebook occupies 60% of a highly differentiated market for "personal social networking" services.¹⁵³ MySpace is no longer counted among the top five.¹⁵⁴ This market is best characterized as a dominant firm with a competitive fringe.¹⁵⁵

The digital-search market is similar. AltaVista was established in 1995 and became a leading search engine until it began losing ground to Google Search. As of 2000, however, AltaVista had an 18% market share compared to Google's 7%.¹⁵⁶ In 2003, Yahoo purchased AltaVista and incorporated parts of its technology into its own search engine. AltaVista was shut down as an independent search engine in 2013.¹⁵⁷

Even in digital markets, entry and exit occurs, shares change, and dominance comes and goes.¹⁵⁸ While large intellectual-property portfolios can make entry

151. Sarah Phillips, *A Brief History of Facebook*, GUARDIAN (July 25, 2007, 5:29 AM EDT), <https://www.theguardian.com/technology/2007/jul/25/media.newmedia> [<https://perma.cc/TFX7-MN65>].

152. See Evan Tarver, 3 *Social Media Networks Before Facebook*, INVESTOPEDIA (Apr. 3, 2020), <https://www.investopedia.com/articles/markets/081315/3-social-media-networks-facebook.asp> [<https://perma.cc/9SQ9-PBAG>].

153. See FTC Facebook Compl., *supra* note 33, ¶¶ 33, 64 (alleging that Facebook's market share has been "in excess of 60%" continuously since 2011). Other sites indicate that Facebook has been losing market share as the market for social-media websites has become more numerous and diverse. Prit Kallas, *Top 10 Social Networking Sites by Market Share Statistics [2021]*, DREAMGROW (Jan. 4, 2021), <https://www.dreamgrow.com/top-10-social-networking-sites-market-share-of-visits> [<https://perma.cc/VXC9-QJP3>].

154. J. Clement, *U.S. Market Share of Leading Social Media Websites 2020*, STATISTA (Nov. 18, 2020), <https://www.statista.com/statistics/265773/market-share-of-the-most-popular-social-media-websites-in-the-us> [<https://perma.cc/EMB3-8J8N>]; see also Elise Moreau, *Is Myspace Dead?*, LIFEWIRE (Dec. 16, 2020), <https://www.lifewire.com/is-myspace-dead-3486012> [<https://perma.cc/747L-PFLL>].

155. Admittedly, market shares in the United States have fluctuated. StatCounter lists the leading competitors in the United States as Facebook (60.68%), Pinterest (20.2%), Twitter (14.47%), and YouTube (1.56%). See *Social Media Stats United States of America*, STATCOUNTER (Jan. 2021), <https://gs.statcounter.com/social-media-stats/all/united-states-of-america#monthly-201806-202101> [<https://perma.cc/HN9T-J4L2>].

156. See *Don't Count AltaVista Out Yet*, FORBES (Oct. 20, 2000, 5:09 PM ET), <https://www.forbes.com/2000/10/20/1020alta.html> [<https://perma.cc/FB5R-T86H>].

157. See Danny Sullivan, *A Eulogy for AltaVista, the Google of Its Time*, SEARCH ENGINE LAND (June 28, 2013, 6:53 PM), <https://searchengineland.com/altavista-eulogy-165366> [<https://perma.cc/GGE9-CZTE>].

158. For good writing on the durability of monopolies, from a variety of perspectives, see YALE BROZEN & GEORGE BITTLINGMEYER, CONCENTRATION, MERGERS AND PUBLIC POLICY 19-43 (1982), which argues that concentration is neither as bad nor as harmful as predicted;

more difficult, widespread licensing can facilitate new entry. IBM, AT&T, and Xerox all initially acquired dominance based in part on large patent portfolios. All subsequently lost their positions, and these industries are now much more competitive. Further, markets subject to widespread multi-homing are very likely easier to enter than markets in which everyone single-homes.¹⁵⁹ One threat to this technological change, however, is exclusionary practices, which include contractual restraints as well as platform acquisitions of the firms that are most likely to emerge as competitors.¹⁶⁰

3. *Declining Costs, Network Structure, and the Extent of Competition*

If a natural monopolist is charging a competitive price, then no rival with the same product, costs, and technology will be able to compete successfully, even if the monopolist does not engage in any exclusionary practices. The typical situation that results in natural monopoly is very high fixed costs, coupled with plant capacity to serve the entire market. This occurs when a firm's costs decline continuously to the point that output is at least one-half of the market at the competitive price. Any equally efficient firm with the same technology whose output is less than half of the market would necessarily have higher costs.

For example, suppose a firm with high fixed costs produces a commodity and experiences declining costs as it increases output. Costs bottom out at an output level of 1000 units per time period. Assume that at the competitive price, which we assume is \$1, the market will clear at 1800 units. Suppose also that a rival producing under the same conditions would be making 800 units or fewer, so its costs would be higher, and it would not be able to earn a profit at the \$1 price.¹⁶¹ Assuming that the natural monopolist can serve the entire market at its low price, the *socially* optimal outcome would be for it to do so—in this case by producing 1800 units and selling them at \$1 per unit. However, as an unregulated monopolist, it will maximize its profits, meaning it could charge a price

Timothy F. Bresnahan, *Empirical Studies of Industries with Market Power*, in 2 HANDBOOK OF INDUSTRIAL ORGANIZATION 1011, 1051–53 (Richard Schmalensee & Robert Willig eds., 1989); David Encaoua, Paul Geroski & Alexis Jacquemin, *Strategic Competition and the Persistence of Dominant Firms: A Survey*, in NEW DEVELOPMENTS IN THE ANALYSIS OF MARKET STRUCTURE 55, 61–73 (Joseph E. Stiglitz & G. Frank Mathewson eds., 1986), which describes the effect of strategic investments on market structure; and Paul A. Geroski & Alexis Jacquemin, *Dominant Firms and Their Alleged Decline*, 2 INT'L J. INDUS. ORG. 1, 13–19 (1984). On the comparative durability of platforms, see Jonathan A. Knee, *Why Some Platforms Are Better than Others*, 59 MIT SLOAN MGMT. REV. 18, 19–20 (2018).

159. On the significance of multi-homing, see *supra* Section I.C.1.

160. See discussion *infra* Section III.A.

161. See HOVENKAMP, *supra* note 26, § 1.4b.

significantly higher than \$1. The traditional prescription is thus to regulate the prices that natural monopolies charge.¹⁶²

Three qualifiers are important.¹⁶³ First, if the firm charges more than its costs, there might be room for other firms in the market. Second, the firm must have the capacity to serve the entire market. Third, a rival with lower costs might survive and even displace the original firm.

First, when a firm charges more than its costs, it creates an opening for rival firms to profit. Historically this has given dominant firms with declining costs a strategic choice: either charge a very low price now, which will keep rivals out; or charge a higher price, which will earn greater immediate profits, but enable rivals to enter the market. Which strategy a firm chooses depends on several factors, including the degree of uncertainty about future demand, changing technology, the position of rivals, the need for short-run profits, and fear of antitrust litigation. For example, U.S. Steel followed the latter strategy of charging high prices for many years, setting a price that permitted a fringe of firms to operate but limiting their growth.¹⁶⁴

Second, a firm with continuously declining costs must also be able to meet market demand at its chosen price. The classic situation where this fails to hold is the passenger airplane flying a designated route: a single plane's per-passenger costs decline as it fills the plane, with costs bottoming out when the plane is at capacity. Most of the costs are fixed over that range; the airplane itself is a fixed cost that does not materially change with the number of passengers. Even the pilot does not cost more money as the plane fills. While fuel costs might be higher as a passenger is added, the amount is small.

Nevertheless, the plane will not be a natural monopoly if the number of people who want to fly a particular route at a certain time is greater than the plane's capacity. In that case, a second plane will be necessary, and it could be provided by either the same firm or a different firm.¹⁶⁵ We would have competition if another firm provided that capacity.

Large capacity suggests why many public utilities (such as electric companies) are natural monopolies, at least at the retail level. Once the electric line is

162. On strengths and weaknesses of the neoclassical case for price regulation of natural monopoly, see Paul L. Joskow, *Regulation of Natural Monopoly*, in 2 *HANDBOOK OF LAW AND ECONOMICS* 1227 (A.M. Polinsky & S. Shavell, eds., 2007).

163. For now, we ignore the possibility of product differentiation, which throws the entire model into disarray. See *infra* Section I.C.4.

164. Thomas K. McCraw & Forest Reinhardt, *Losing to Win: U.S. Steel's Pricing, Investment Decisions, and Market Share, 1901-1938*, 49 *J. ECON. HIST.* 593, 599-600 (1989).

165. The market might still be a natural monopoly if there are economies of scale to the operation of multiple planes. That is, the incumbent firm might be able to provide a second flight at a lower cost than a different firm could provide it.

in place, the incremental cost of additional usage is very small, and a single set of lines is usually adequate to meet all demand. The story for airline routes is more variable. For large routes, such as Chicago to Los Angeles, many planes will be needed to meet each day's demand, and there will be room for multiple carriers. However, a much smaller route, such as Kalamazoo, Michigan to South Bend, Indiana, is likely to have room for only one plane.

Platforms that sell purely digital content do not typically have serious capacity constraints on their products. For example, there is no limit on how many times a YouTube video can be viewed or a Spotify song can be streamed. As a result, the problem of capacity to serve the entire market typically does not arise, assuming platforms have the transmission capacity to satisfy demand. Physical products, such as those sold by Amazon, are another matter, and for them the capacity problem likely operates as a real constraint.

Third, even a natural monopoly can be displaced by a different technology or by a firm with lower costs. For example, railroads had a natural monopoly advantage in many markets for years, but they were eventually displaced by long-distance trucking.¹⁶⁶ The AT&T telephone system, as another example, was very likely a natural monopoly during the many decades in which all calls were hard wired between callers. The rise of wireless communication and the emergence of firms like MCI and Sprint, which took advantage of these technologies, challenged AT&T's dominance. Now most parts of the highly differentiated industry are competitively structured.¹⁶⁷ In another realm, newspapers that were thought to be dominant in their service areas had to fight off emergent radio stations for advertising revenue.¹⁶⁸ Today, they are battling against the internet.¹⁶⁹ In sum, the question of whether a market is a natural monopoly is technology dependent—and thus, time dependent. In digital markets in particular, technology can change quickly.

Another important consideration is that just because a platform is digital, not all of its output are necessarily digital. At one extreme, platforms such as

166. See *E. R.R. Presidents Conference v. Noerr Motor Freight, Inc.*, 365 U.S. 127, 128-32 (1961) (recounting the conflict); see also Note, *Appeals to the Electorate by Private Businesses: Injury to Competitors and the Right to Petition*, 70 YALE L.J. 135, 137-40 (1960) (describing the rise of the trucking industry over railroads).

167. See *infra* notes 380-383 and accompanying text.

168. *E.g.*, *Lorain Journal Co. v. United States*, 342 U.S. 143, 143 (1951) (finding a newspaper liable for refusing to deal with anyone who purchased advertising on a competing radio station).

169. See Hamza Shaban, *Digital Advertising to Surpass Print and TV for the First Time, Report Says*, WASH. POST (Feb. 20, 2019, 9:53 AM EST), <https://www.washingtonpost.com/technology/2019/02/20/digital-advertising-surpass-print-tv-first-time-report-says> [https://perma.cc/E7NZ-YEVC].

Facebook, Google Search, Spotify, and Netflix produce digital content almost exclusively.¹⁷⁰

Amazon, Uber, and Airbnb are all very different. They sell physical products, rides, and short-term lodging, respectively. For these, each sale encounters additional variable costs. Further, the goods or services in question are rivalrous, which means that a purchase of one unit depletes what is left over, creating limitations on the number that any firm can produce.

For example, Amazon is a very large digital platform. Among its product offerings is some purely digital content, including Amazon Music, Prime Video, ebooks, and downloadable computer software. But the bulk of Amazon's sales are for things like toasters, power tools, luggage, food, and so on. Each sale of a Samsonite bag on Amazon displaces a bag, whether made by Samsonite or someone else, that could have been purchased from a different venue. Further, those venues could include other digital platforms, as well as traditional brick-and-mortar stores of various kinds. A *Consumer Reports* article from late 2019 found that luggage was being sold by a wide array of both online digital platforms and traditional brick-and-mortar stores, and some sellers who owned both. As of that date, two-thirds of buyers purchased their luggage from a physical store rather than online. Among the highest-rated online sellers were Luggage Pros, Away, and Amazon. The brick-and-mortar stores included Walmart, Sears, Target, and Costco.¹⁷¹ For a product such as a Samsonite bag, it is not clear that Amazon has a significant advantage over rivals. And more generally, it is certainly not clear that a monopoly seller of bags (even of Samsonite bags) will ever emerge.

The natural-monopoly question for networks is distinctive because it involves two specific questions. First, is the network a natural monopoly? Second, must the network be controlled by a single firm? To illustrate, the global telephone system is a natural-monopoly network because the range of network externalities is global in the sense that a larger network always has advantages over a smaller one. But the telephone system is competitively structured because it is run by many firms, meaning no single firm dominates it.

Networked technologies such as 4G and 5G cellphones are characterized by very considerable economies of scale, significant intellectual-property rights,

170. Facebook transacts in messages, digital photos, and videos, all of which are digital. Spotify licenses streamed music, podcasts, or other programming which is entirely digital. Netflix does the same thing with movies and TV shows. It does retain a small and shrinking portion of its business for the rental of physical DVD or Blu-ray discs. Netflix, Inc., Annual Report (Form 10-K) (Jan. 29, 2020) (showing DVD subscription revenues declining since 2017).

171. *Best Luggage Stores: Online or Walk-In?*, CONSUMER REPS. (Dec. 17, 2019), <https://www.consumerreports.org/luggage-stores/best-luggage-stores-online-or-walk-in> [https://perma.cc/P35T-4QJY].

network infrastructure, and digital elements such as operating systems. But they also feature more conventional economics in the manufacture and distribution of network devices. Here, an important factor cutting against natural monopoly is the high degree of interoperability, which facilitates competition inside the network.¹⁷²

In the case of AT&T, changes in technology facilitated the emergence of competition. Nevertheless, an antitrust consent decree and, later on, federal legislation were needed to further and protect interoperability and competition inside the network. Today, interconnection is virtually seamless. For example, the cellular portion of the network accommodates both the Apple iPhone technology and the different technology used by numerous Android manufacturers. Indeed, in spite of the need to coordinate many manufacturers, the open source Android system has grown more rapidly than the unitary Apple system and is now dominant in many parts of the world.¹⁷³

Both declining costs on the production side and increasing value on the consumer side can favor larger organizations. These larger organizations could take the form of single firms or collaborations of firms. This is where network effects enter. Network effects occur when customer value increases as the volume of transactions increases.¹⁷⁴

If a network is owned by a single firm, larger firms clearly hold an advantage. If the network can be offered jointly by multiple firms, however, that need not be the case. This fact provides an important lesson when we are considering remedies for digital platform monopoly: it is often better to facilitate competition by multiple firms *within* a network, rather than encouraging the emergence of multiple networks. When the quality of interconnection is high, a natural-monopoly network can accommodate several firms, including very small ones. As developed later, an antitrust remedy can accomplish this result, leading to competition *within* a natural-monopoly network.¹⁷⁵

172. On interoperability as a remedy, see *infra* notes 367–377 and accompanying text.

173. On relative growth rates since 2007, see Vlad Savov, *The Entire History of iPhone vs. Android Summed Up in Two Charts*, VERGE (June 1, 2016, 11:18 PM EDT), <https://www.theverge.com/2016/6/1/11836816/iphone-vs-android-history-charts> [<https://perma.cc/3UNV-68QY>]. See also Mark McDonald, *iOS 10 vs Android Nougat: What Should You Pick?*, MEDIUM (June 5, 2017), <https://medium.com/swlh/ios-10-vs-android-nougat-what-should-you-pick-45fe8od319cf> [<https://perma.cc/9TDJ-MYV8>] (discussing Android's growing market share).

174. For example, the telephone system is worth more to each user as the number of users increases, whether or not costs decline. All else equal, a larger network will be more desirable than a smaller one. Indeed, the optimal phone system would be one in which every person can talk to everyone else. In a population of 1000, a single system covering all 1000 would be more valuable than two systems that each served 500 but were unable to interconnect.

175. See *infra* text accompanying notes 380–382.

Direct network effects push markets to coalesce around a single standard, such as a single fuel for automobiles or a single digital format for video discs.¹⁷⁶ By contrast, low-cost, high-quality interconnection tends to mitigate these funneling effects toward a single standard.¹⁷⁷ If Android and Apple phones were unable to interconnect such that communication between the two systems was impossible, then the market would likely move to adopt one of them over the other.¹⁷⁸ As it stands, the two are simply differentiated but competing products on a common network.

Network effects can be either “direct” or “indirect.” A direct network effect occurs when a network becomes more valuable as the number of users or volume of usage on a single side increases, as in the example of the telephone. By contrast, an “indirect” network effect refers to the added value on one side of the platform from increased participation or usage on the *other* side of the platform.¹⁷⁹ For example, an increasing number of riders on Uber will make it more valuable to drivers, and thus attract drivers to the platform. As the number of drivers increases, so too the number of riders, because availability increases and wait time decreases.¹⁸⁰

In a two-sided market, the platform or venue intermediates between two distinct but interdependent groups of participants in order to yield the optimal mix of participation and price. In equilibrium, this will be the mix that maximizes the platform’s profits.

For example, a printed periodical may deal with subscribers on one side and advertisers on the other side, obtaining revenue from both. Higher revenue from advertisers permits the magazine to charge lower subscription prices, and vice versa. However, revenue will decline if one side gets out of kilter. Excessive advertising might make the periodical less attractive to customers. Some will cancel their subscriptions, making the platform less valuable to advertisers. On the other side, too little advertising revenue will force the publisher to hike

176. Such markets are sometimes described as experiencing “economies of scale in consumption.” See Richard A. Posner, *Antitrust in the New Economy*, 68 ANTITRUST L.J. 925, 926 (2001).

177. See *infra* Section II.C.2.b.

178. The reason standards battles over analog or digital video technologies such as VHS or Blu-ray led to single winners was because, at least at the consumer end, the two technologies were not able to interconnect seamlessly.

179. See Jeffrey Church & Neil Gandal, *Network Effects, Software Provision, and Standardization*, 40 J. INDUS. ECON. 85, 85-87 (1992) (making the same argument for computers and software); see also Matthew T. Clements, *Direct and Indirect Network Effects: Are They Equivalent?*, 22 INT’L J. INDUS. ORG. 633, 633-34 (2004) (comparing direct and indirect network effects).

180. Likewise, as the number of users of a particular credit card increases, that card becomes more valuable to merchants. At the same time, as the number of merchants who take a card increases, the card becomes more valuable to cardholders.

subscription prices. The trick for the publisher is to find not only the right price level for each side, but also the correct “participation level,” or balance between subscribers and advertisers.¹⁸¹

A two-sided direct transaction market such as Uber, where the platform acts as a broker between the two sides, provides another good example. Higher fares will encourage more drivers but discourage riders; lower fares do the opposite. Further, the relative availability and demand changes throughout the day. The platform operator must find the price that will optimize participation between the two at any given moment.

Even a two-sided platform with both direct and indirect network effects is not necessarily a natural monopoly. If competition is possible between two-sided platforms,¹⁸² then antitrust should be tasked with promoting it.

Platforms may also compete with nonplatform businesses. For example, AmazonBasics carry-on luggage competes with other luggage manufacturers, such as Samsonite or TravelPro, and these manufacturers sell at least some of their bags through traditional stores. In its *Amex* decision, the Supreme Court incorrectly concluded that “[o]nly other two-sided platforms can compete with a two-sided platform for transactions.”¹⁸³ That statement represented a triumph of ideology over reality. The question of which firms compete with which other firms is one of market behavior and distinctly a question of fact.¹⁸⁴

In any event, the Supreme Court’s erroneous statement that only platforms can compete against other platforms was only dicta and should be treated as such by lower courts. Perhaps the Court’s mistake stems from the fact that the only relevant competing entities in *Amex* (Visa, MasterCard, and Discover) were all two-sided platforms.¹⁸⁵ In *Amex*, no one denied that Amex and other two-sided

181. See Erik Hovenkamp, *Platform Antitrust*, 44 J. CORP. L. 713, 715, 722-24 (2019).

182. For example, Uber, which operates on a two-sided platform, competes with Lyft, another two-sided platform, but it also competes with traditional taxicab companies, and perhaps even with other modes of transportation. See *Phila. Taxi Ass’n v. Uber Techs., Inc.*, 886 F.3d 332 (3d Cir. 2018) (concerning an antitrust case brought by traditional taxicab association against Uber).

183. *Ohio v. Am. Express Co.*, 138 S. Ct. 2274, 2287 (2018); see also *United States v. Sabre Corp.*, 452 F. Supp. 3d 97, 136-38 (D. Del. 2020) (relying on this statement to conclude that a merger between two computerized airline-reservation systems could not be a merger of competitors because one was two-sided and the other was not), *vacated as moot*, No. 20-1767, 2020 WL 4915824 (3d Cir. July 20, 2020) (vacating the district court’s decision after the parties abandoned the transaction).

184. Herbert Hovenkamp, *The Looming Crisis in Antitrust Economics*, 101 B.U. L. REV. 489 (2021).

185. See *Amex*, 138 S. Ct. at 2283 (concluding that American Express did not compete with alternatives such as cash or debit cards because its antisteering rule did not apply to these products). For example, Carvana.com is a monopoly seller of used automobiles only if it does not compete with thousands of traditional used car dealers.

credit-card platforms competed with one another. Indeed, Amex's antisteering rule would have been pointless if they did not compete.¹⁸⁶

To drill down on the Court's error—the *Amex* Court was unclear about how it could be that two-sided platforms and traditional markets cannot compete. Certainly it is not the case that a two-sided platform such as Uber cannot take sales away from a traditional taxicab company, or vice versa,¹⁸⁷ or that cash transactions cannot compete with credit-card transactions. People switch back and forth between these things all the time.

More technically, we would say that the two firms compete if one is in a position to force the other's prices down to its cost. That would be the proper question to determine market definition under the antitrust laws. For example, a traditional taxicab company would be regarded as a competitor with Uber if competition from the cab company was sufficiently robust to prevent Uber from charging a price significantly higher than its costs.¹⁸⁸ The question of who competes with Uber is intensely factual.

Finally, it is not clear that in long run equilibrium only a digital platform will dominate. For example, Uber and Lyft may eventually drive traditional taxis out of the market, but perhaps not. Just as likely, taxicab companies will adopt technologies that make them more competitive with multi-homing customers. But antitrust policy necessarily looks at shorter or middle runs, so what counts is the extent of substitution now and in the near term.¹⁸⁹ In all cases, the question whether a particular two-sided platform competes with a more traditional market is one of *fact*, not of law.

186. The rule was intended to forbid merchants from steering the user of a high-priced Amex card to a less costly credit-card rival.

187. See generally *Phila. Taxi*, 886 F.3d 332 (providing an example of a monopolization suit brought by traditional taxicab companies against Uber).

188. See AREEDA & HOVENKAMP, *supra* note 9, ¶¶ 530–31, 536–38. In setting its price, Uber may consider demand and balance participation between its own drivers and riders, but also do so with an eye toward competing with Lyft and conventional taxicab companies. Further, participants in the market engage in multi-homing: customers can switch among Uber, Lyft, and taxicabs, taking whichever is most favorable at the moment. Some drivers do the same thing. See Jason Laughlin, *From Cab to Uber to Cab, Drivers Try to Find a Way to Make a Living*, PHILA. INQUIRER (May 17, 2018, 12:12 PM), <https://www.inquirer.com/philly/business/transportation/uber-lyft-cab-drivers-competition-philadelphia-20180517.html> [https://perma.cc/2SVB-G4TH] (profiling drivers who drive for both Uber and a Philadelphia taxicab company).

189. See Herbert Hovenkamp, *Is Antitrust's Consumer Welfare Principle Imperiled?*, 45 J. CORP. L. 65, 67 (2019); Gregory J. Werden, *Demand Elasticities in Antitrust Analysis*, 66 ANTITRUST L.J. 363, 372–73 (1998) (speaking of an “intermediate run”).

4. *Product Differentiation and Winner-Take-All*

Even if costs decline continuously as output increases or network effects are large, a digital platform is still not necessarily a natural monopoly. Another pervasive reason for competition is product differentiation. While a natural monopolist can exclude a rival with an identical product simply by charging a competitive price, the differentiated entrant faces a different demand curve. As a result, there can be room for new entry even against a much larger incumbent.

Indeed, the inroads into monopoly typically come from entrants whose product is different from the incumbent's. For example, railroads encountered significant competition from trucking,¹⁹⁰ and AT&T's competition for its traditional landlines came from wireless technology providers.¹⁹¹ When it comes to digital platforms, Facebook displaced MySpace, not by simply going head-to-head with a substantially identical product, but rather by offering a set of inter-member communication services that MySpace lacked.¹⁹² In its complaint, the FTC recognized that the most likely competitive threats to Facebook come from differentiated firms, not simple lookalikes.¹⁹³

Consider also internet dating platforms, which are two-sided digital platforms that have significant indirect network effects and almost exclusively digital output. Dating sites match people who want to pair up with a complementary partner. They become more valuable to one set of participants as the number of a complementary set of participants is larger. Ordinary logic would conclude that the market for dating sites is a natural monopoly because a site with more participants would always have an advantage over a smaller site: seekers would always prefer sites with a larger number of sought-after participants, and this would support the full population of dating-site users being on one platform.

So why don't we have a single dating site that herds all participants into one place? One possibility, of course, is that the market for dating sites has not yet

190. See *supra* note 166 and accompanying text.

191. See *supra* text accompanying note 167.

192. See Adam Hartung, *How Facebook Beat MySpace*, FORBES (Jan. 14, 2011, 12:36 AM EST), <https://www.forbes.com/sites/adamhartung/2011/01/14/why-FB-beat-myspace> [<https://perma.cc/HY9C-9ZMA>] ("The founders kept pushing the technology to do anything users wanted. If you have an idea for networking on something, Facebook pushed its tech folks to make it happen.").

193. FTC Facebook Compl., *supra* note 33, ¶ 69 ("[T]he most significant competitive threats to Facebook Blue may come not from near clones of Facebook Blue, but from differentiated products that offer users a distinctive way of interacting with friends and family for which Facebook Blue is not optimized.").

reached an equilibrium. Online dating platforms have been around for some twenty-five years, however, and their numbers and revenues are still growing.¹⁹⁴

Today, the dating industry is best described as having a dominant firm aggregating several sites (Match Group) with a competitive fringe.¹⁹⁵ Options abound. Dating sites range from the staid and traditional, such as Match.com; to the much more risqué, such as AdultFriendFinder.com; to more focused sites such as Grindr for the LGBTQ community, OurTime for older adults, J-Date for Jewish people, Christian Mingle for Christian evangelicals, Shaadi for Indians, EliteSingles for people with higher education levels, PURRsonals for cat lovers, Hotsaucepassions for lovers of spicy food, and many more. Product differentiation in dating sites results mainly from reduced search costs in a world of diverse user preferences. As long as this product differentiation is both durable and desired, dating sites will not be winner-take-all platforms.

The same is true of a variety of other two-sided platforms that have significant network externalities. One widely studied example is video games, which operate on two-sided platforms but are differentiated in hardware formats as well as the games themselves.¹⁹⁶ In addition, many periodicals that depend on

194. *A History of Love & Technology*, POV (July 15, 2013), <http://archive.pov.org/xoxosms/infographic-technology-dating> [<https://perma.cc/5SXZ-ZSCN>]. Since the mid-1990s, the industry has grown steadily. As of October 2020, there were 2,154 firms, some of whom owned multiple sites, and continuing growth. John Madigan, *Dating Services Industry in the US: Finding the One: Industry Revenue Is Expected to Benefit from Rising Demand Due to Fading Social Stigmas*, IBISWORLD 7 (U.S. Industry (NAICS) Report 81299a, Oct. 2020), <https://my.ibisworld.com/download/us/en/industry/1723/2/o/pdf> [<https://perma.cc/F86V-AYS7>].

195. In addition to the eponymous Match, Match Group owns Hinge (acquired 2019), Tinder (acquired 2017), and OKCupid (acquired 2011). It has acquired many other smaller sites and was estimated in 2019 to have a total market share of 66% across its assets. In comparison, eHarmony, which also owns some smaller sites, has a market share of 10.8%. No other firm exceeds an 8% market share. Evan Michael Gilbert, *Antitrust and Commitment Issues: Monopolization of the Dating App Industry*, 94 N.Y.U. L. REV. 862, 876 tbl.2 (2019). It is significant that a large firm such as Match has acquired sites such as Tinder or OKCupid and did not blend them all into the same site, but rather maintains them with separate identities. This practice indicates that the sites are not natural monopolies. If they were, then as they came under the control of a single owner, they would be blended into one in order to take advantage of network effects. For example, if the same firm came to acquire two substantially identical telephone networks with five hundred subscribers on each, merging the two would create very considerable value. The economic theory of the firm indicates that the firm would merge them. See R.H. Coase, *The Nature of the Firm*, 4 ECONOMICA 386, 396-98 (1937).

196. For the large and diverse literature on single-homing, multi-homing, and product differentiation in video games, see, for example, Carmelo Cennamo, Hakan Ozalp & Tobias Kretschmer, *Platform Architecture and Quality Trade-Offs of Multihoming Complements*, 29 INFO. SYSS. RES. 461, 465-67 (2018); Matthew T. Clements & Hiroshi Ohashi, *Indirect Network Effects and the Product Cycle: Video Games in the U.S., 1994-2002*, 53 J. INDUS. ECON. 515, 518-22 (2005); Myriam Davidovici-Nora & Marc Bourreau, *Two-Sided Markets in the Video Game Industry*, 173-74 RÉSEAUX 97, V-VIII (Elizabeth Libbrecht trans., 2012), <https://www.cairn-int>

advertising have both readership and advertising rates that become more attractive as numbers rise. But they are also significantly differentiated from one another. Two magazines of roughly the same circulation, such as *Wired* and *Southern Living*, are unlikely to merge into one.¹⁹⁷ This is why any claim that two-sided markets are winner-take-all or even winner-take-most is simply wrong. That statement is very likely true only of undifferentiated products that sellers are unable to distinguish from their competitors.

The same thing is true of more traditional markets. For example, a copyrighted digital book, such as an economics or legal text, experiences continuously declining costs as more copies are produced. This is even more true of ebooks, where virtually all costs are fixed. Such declining costs are characteristic of natural monopolies.¹⁹⁸ So why don't we have a single text for each subject, which would be much cheaper than producing and maintaining the number we actually do? The answer once again is product differentiation. As long as different economics texts appeal to different audiences, there will be room for multiple competitors.¹⁹⁹

For a few products, such as internet search engines, product differentiation has been less successful. In these cases, natural monopoly is a more likely reality.

.info/article-E_RES_173_0097--two-sided-markets-in-the-video-game.htm [https://perma.cc/C9ZA-BCUL]; Venkatesh Shankar & Barry L. Bayus, *Network Effects and Competition: An Empirical Analysis of the Home Video Game Industry*, 24 STRATEGIC MGMT. J. 375, 375-77 (2003); Haeyop Song, Jaemin Jung & Daegon Cho, *Platform Competition in the Video Game Console Industry: Impacts of Software Quality and Exclusivity on Market Share*, 30 J. MEDIA ECON. 99, 101-03 (2017); and Thomas Teeter & Ryan Lunsford, *Electronic Arts: Strategic Differentiation in the Global Video Gaming Industry*, in PROCEEDINGS OF THE 14TH INTERNATIONAL RAIS CONFERENCE ON SOCIAL SCIENCES AND HUMANITIES 59, 60-62 (Titus Corlăţean ed., 2019).

197. See *Reach of Popular Magazines in the United States in June 2019*, STATISTA, <https://www.statista.com/statistics/208807/estimated-print-audience-of-popular-magazines> [https://perma.cc/87PL-FF3M]. Nor is one likely to drive the other out of existence and become dominant. Even if the two came to be owned by the same parent company, it is unlikely that the owner would blend the two into one. They appeal to very different audiences and, as a consequence, different advertisers.

198. See discussion *supra* Section I.C.3.

199. On the role of product differentiation in creating competition among books and other copyrighted works, which typically have continuously declining costs, see Christopher S. Yoo, *Copyright and Product Differentiation*, 79 N.Y.U. L. REV. 212, 246-49 (2004).

Even though there are differences among search engines,²⁰⁰ none of these differences has significantly balanced out Google's dominance.²⁰¹ This is true even though multi-homing is readily possible.²⁰²

What accounts for these lopsided numbers in the search engine market is not entirely clear. Decisions such as the European Union (EU) case against Google Search were premised on the claim that Google biases search results to favor paid supporters or its own assets.²⁰³ While search biases might increase Google's *revenue*, they should serve to decrease, rather than increase, its share of the search market. As long as switching among search engines is easy, biased results should lead users to substitute away.

One likely possibility raised in the antitrust complaints filed in late 2020 is that Google obtains a market share advantage for search because it is tied to other assets. For example, Google search has traditionally been the default search engine on Android smartphones, at least until an EU decision in 2018.²⁰⁴ Further, Google pays Apple billions of dollars annually to be the default search engine on iPhones—a practice that is currently being challenged by both the federal government and several states.²⁰⁵

These “ties” are only defaults, however. To the extent searchers are disappointed by search bias, they could in theory switch to a different search

200. Search engines differ in page formats, display of results, the amount and nature of the information that they preserve, and their algorithms.

201. Worldwide search data from 2020 show Google (Alphabet) with a market share in the neighborhood of 90%, Bing (Microsoft) with around 2.7%, and no one else with greater than 2%. *Search Engine Market Share Worldwide*, STATCOUNTER (Dec. 2020), <https://gs.statcounter.com/search-engine-market-share> [<https://perma.cc/H7GH-R3LX>]. The share in the United States is a bit lower—about 88%. *Search Engine Market Share in 2021*, OBERLO, <https://www.oberlo.com/statistics/search-engine-market-share> [<https://perma.cc/LS75-9JKS>].

202. In the Colorado-led action against Google, the plaintiffs allege that the market would be significantly more differentiated in a more competitive environment. Colorado Google Compl., *supra* note 28, ¶ 16. On multi-homing and search engines, see Aaron S. Edlin & Robert G. Harris, *The Role of Switching Costs in Antitrust Analysis: A Comparison of Microsoft and Google*, 15 YALE J.L. & TECH. 169, 203-04 (2013).

203. See Case AT.39740, Google Search (Shopping) at 2-3 (June 6, 2017), https://ec.europa.eu/competition/antitrust/cases/dec_docs/39740/39740_14996_3.pdf [<https://perma.cc/C8ZY-6VZX>].

204. See *infra* notes 282-283 and accompanying text.

205. United States Google Compl., *supra* note 96, ¶¶ 45, 119 (alleging that Google pays Apple “billions” of dollars each year to make Google the default search engine on iPhones); Colorado Google Compl., *supra* note 28, ¶ 12 (“[A]ccording to public estimates Google pays Apple between \$8 and \$12 billion per year to ensure that Google is enthroned as the default search engine on Apple devices.”). The Colorado complaint also alleges that Google has secured default placement on 80% of web browsers. *Id.* ¶¶ 42-43. As a result, Google is the default search engine on “nearly all mobile devices in the United States.” *Id.* ¶ 47.

engine.²⁰⁶ Anyone with a desktop, laptop, or handheld can have multiple search engines and switch among them on a whim. While search is subject to economies of scale, users do not pay the cost, so there are no *cost* advantages associated with doing a search on Google or switching to an alternative. More likely, economies of scale show up in higher quality results.²⁰⁷ If that case is made, Google Search might turn out to be a natural monopoly, but one amenable to a data-pooling solution.²⁰⁸

One important question for policy purposes is whether Google Search's dominance results from exclusionary practices plus design choices that others could duplicate, or whether it results strictly from advantages that accrue due to its larger size. If Google Search is a natural monopoly, then a court order divesting Google Search would not increase competition; it would simply assign the monopoly to a different owner. Pointing in the other direction, however, are allegations of Google's exclusionary contracts.²⁰⁹ If Google Search were in fact a natural monopoly, such agreements would be unnecessary. Google's arrangements should be addressed as exclusionary contracts in restraint of trade, and the court need not determine whether Google Search is a natural monopoly.

Finally, the ability of firms to differentiate their products or services at least partly explains the dominant platform strategy of buying up nascent digital firms, discussed later.²¹⁰ Most of these acquisitions are not purely horizontal but rather fall into the category of "product extension" mergers,²¹¹ which are acquisitions intended to broaden the range of products or services that the acquiring firm offers. They may be an effort either to obtain product differentiation or to

206. Other possibilities are explored in Fiona M. Scott Morton & David C. Dinielli, *Roadmap for a Digital Advertising Monopolization Case Against Google*, OMIDYAR NETWORK (May 2020), <https://omidyar.com/wp-content/uploads/2020/09/Roadmap-for-a-Case-Against-Google.pdf> [<https://perma.cc/Y9QN-5L28>].

207. See Maurice E. Stucke & Ariel Ezrachi, *When Competition Fails to Optimize Quality: A Look at Search Engines*, 18 YALE J.L. & TECH. 70, 104 (2016) (noting that while multi-homing of search engines is readily available, few users do it; suggesting scale economies as the explanation); David R. Keith & Hazhir Rahmandad, *Are On-Demand Platforms Winner-Take-All Markets?*, 2019 ACAD. MGMT. PROC., <https://journals.aom.org/doi/pdf/10.5465/AMBPP.2019.150> [<https://perma.cc/73G5-T2LF>]. The government also alleges significant scale economies in its antitrust complaint. See United States Google Compl., *supra* note 96, ¶¶ 35-38.

208. See *infra* notes 384-385 and accompanying text.

209. Google made large payments to Apple to be the default search engine on the iPhone and struck other agreements requiring various partners to favor Google Search. These contracts are being challenged in DOJ's suit against Google. See United States Google Compl., *supra* note 96.

210. See *infra* notes 395-410 and accompanying text.

211. See AREEDA & HOVENKAMP, *supra* note 9, ¶¶ 1131b, 1144d (discussing product extension mergers); see also C. Scott Hemphill & Tim Wu, *Nascent Competitors*, 168 U. PA. L. REV. 1879 (2020) (discussing the importance of protecting nascent competitors).

cut off efforts by others to develop differentiated alternatives. Here, antitrust policy concerning startup acquisitions becomes relevant. Large platforms such as Facebook, Amazon, or Google may have been able to maintain their positions by buying up all of the prospective challengers before they can mature into more formidable rivals.

II. ANTITRUST REMEDIES AGAINST DOMINANT PLATFORMS

A. Against Platform Exceptionalism

In *Amex*, the Supreme Court disregarded a basic principle about markets, which is that they consist of close substitutes.²¹² Instead, it lumped production complements into the same market, and in the process, it stymied coherent economic analysis of the problem. To be sure, power in one side of a two-sided market cannot be assessed without determining what is occurring on the other side. But one does not need to group the two sides into the same “market.” Rather, a relevant market should be determined by reference to the side where anticompetitive effects are feared. Then, assessing power requires the fact finder to consider offsetting effects, some of which may occur on the other side.²¹³

Second, the Court ignored an important distinction between fact and law. Disputes about market boundaries involve questions of fact. Nevertheless, the majority wrote—as a matter of law—that two-sided platforms compete exclusively with other two-sided platforms. These dicta have already produced mischief in lower-court decisions. For example, it led one court to conclude that a merger between a two-sided online flight-reservation system and a more traditional system could not be a merger of competitors.²¹⁴

Third, without argument or evidence, the Court required litigants to show market power indirectly in vertical restraints cases by reference to a relevant market, even though superior techniques are available. Direct measures are particularly useful in digital markets, where the necessary data are easy to obtain and

212. See Hovenkamp, *supra* note 184, at 14–15, 29–33.

213. See Hovenkamp, *supra* note 23; see also Pike, *supra* note 19, at 15.

214. United States v. Sabre Corp., 452 F. Supp. 3d 97, 136 (D. Del. 2020) (quoting *Ohio v. Am. Express Co.*, 138 S. Ct. 2274, 2287 (2018) (“Only other two-sided platforms can compete with a two-sided platform for transactions.”)), *vacated*, No. 20-1767, 2020 WL 4915824, at *1 (3d Cir. July 20, 2020). While Sabre facilitates interconnections on a two-sided platform, Farelogix provides scheduling and routing services to the airlines, which then sell the services on their own websites or through travel agents. See Laura-Lucia Richter, *Analysis: The Sabre/Farelogix Transaction and Why Platform Economics Will Matter*, NERA 3-4 (2019), https://www.nera.com/content/dam/nera/publications/2019/PUB_SabreFarelogix%20platforms.pdf [<https://perma.cc/PKC5-RVJN>].

product differentiation makes traditional market definition unreliable.²¹⁵ This was another breach of the boundary between fact and law.

Fourth, the Court misunderstood the economics of free riding, ignoring the fact that when a firm is able to recover the value of its investments through its own transactions, free riding is not a problem.

Fifth, the Court failed to perform the kind of transaction-specific factual analysis that has become critical to economically responsible antitrust law. Rather, it simply assumed, without examining the actual transactions before it, that losses on one side of a two-sided market are inherently offset by gains on the other side.²¹⁶ Amex's antisteering rule produced immediate losses for *both* the affected cardholder and the affected merchant. The only beneficiary was Amex, the operator of a platform able to shelter itself from competition. That competition, in turn, would have benefitted both cardholders and merchants.

Markets differ from one another.²¹⁷ This is why we apply mainly antitrust law to some markets, regulation to others, and some mixture of the two to yet others. It is also why antitrust is so fact intensive, particularly on issues pertaining to market power or competitive effects. Indeed, the biggest advantage that antitrust has over legislative regulation is its fact-driven methodology. Antitrust courts do and should avoid speaking categorically about market situations that are not immediately before them and avoid making cursory conclusions based on inadequate facts. Within the antitrust framework, there is no reason to think that digital platforms are unicorns whose rules as a class differ from those governing other firms. Every market has its distinct features, but the ordinary rules of antitrust analysis are adequate to consider them. The *Amex* decision is a cautionary tale about what can happen when a court is so overwhelmed by a market's idiosyncrasies that it makes grand pronouncements, abandoning well-established rules for analyzing markets in the process.

Most digital platforms are not structural winner-take-all markets. Most dominant platforms cannot maintain their position simply by setting a price at or a little above the competitive level. Just as other dominant firms, if they wish to maintain their power, they must behave strategically. Further, the general case for regulating dominant platforms is weak, at least if the goal of regulation is the ordinary neoclassical one of approximating competitive rates of output.²¹⁸ Empirically, of course, the purposes of regulation are much broader and more

215. See text accompanying *supra* notes 15-17.

216. See Hovenkamp, *supra* note 181, at 745-47.

217. See, e.g., Herbert Hovenkamp, *Regulation and the Marginalist Revolution*, 71 FLA. L. REV. 455, 492-95 (2019).

218. For a statement of this view, see ALFRED E. KAHN, *THE ECONOMICS OF REGULATION: PRINCIPLES AND INSTITUTIONS* 11-12 (1988).

diverse than the range of rationales for antitrust.²¹⁹ For example, regulatory goals could be dictated by telecommunications policy, national security, privacy, decency, political balance, equality, protection of particular interest groups, or other values. If the goal of regulation is something other than maintaining competitive levels of output, it will have to be implemented by means other than the antitrust laws.

Just as the digital platform is not a unicorn, it is also no monolith: platforms differ substantially from one another. One important difference lies in the nature of the products. Some platforms have inputs and outputs that are composed primarily of intellectual-property rights or other digital content that is nonrivalrous and inexhaustible. Others deal in more tactile goods and services where the power to exclude varies from one situation to another. For some technologies, product differentiation serves to make natural monopoly highly unlikely. Some platforms compete intensely with more traditional markets, while others do not.

As a result, antitrust litigation against platforms requires individualized fact finding, an assessment of competitive harms, and relief appropriately tailored for the circumstances.

B. Anticompetitive Conduct

This very brief discussion is not intended to make a case for antitrust enforcement against any particular platform.²²⁰ Setting aside mergers,²²¹ the conduct alleged in the various government complaints filed in late 2020 against Facebook and Google mainly involves contracting with various suppliers or other business partners. This includes exclusive or quasi-exclusive dealing, most-favored-nation clauses,²²² loyalty practices,²²³ and tying and default rules.²²⁴ The complaints also challenge prohibitions on the app developers' creation of services that compete with Facebook and on app developers partnering with

219. See BREYER, *supra* note 70, at 15-25 (1982).

220. For good evaluations of two possibilities, see Fiona M. Scott Morton & David C. Dinielli, *Roadmap for an Antitrust Case Against Facebook*, OMIDYAR NETWORK 11, 15 (2020), <https://www.omidyar.com/sites/default/files/Roadmap%20for%20an%20Antitrust%20Case%20Against%20FB.pdf> [<https://perma.cc/3V2N-CCGS>]; and Scott Morton & Dinielli, *supra* note 206, at 13, 15. For more general coverage, see AREEDA & HOVENKAMP, *supra* note 9, *passim*.

221. See *infra* Part III (discussing platform acquisitions).

222. See AREEDA & HOVENKAMP, *supra* note 7, ¶¶ 768a6, 1807b1.

223. *Id.* ¶¶ 749, 1821a.

224. *Id.* ¶¶ 1700-83.

Facebook's competitors.²²⁵ Under established antitrust doctrine, these arrangements would be reachable under the Sherman Act. Most are vertical agreements, which are subject to the rule of reason. Unfortunately, the federal courts have made the rule of reason unnecessarily harsh on plaintiffs, who face high hurdles to bringing a *prima facie* case.²²⁶ In large part, this results from a lingering antienforcement bias held by the judiciary, even though this normative baseline no longer reflects the economic consensus.²²⁷

There may also be some anticompetitive horizontal agreements. A state AG antitrust complaint brought against Google alleges an unlawful agreement between Google and Facebook to restrain the market for header bidding.²²⁸ In addition, Google's payments to Apple to make Google Search the iPhone's default search engine might involve a commitment by Apple not to develop its own search engine in competition with Google. Such a promise, if it is found to exist, could be a *per se* unlawful market-division agreement.²²⁹ In a related area, Uber has been fighting off claims of driver price fixing.²³⁰ Any of these firms might also agree anticompetitively not to hire one another's employees.²³¹

While both Google and Facebook are large firms in networked markets, none of these complaints is a broadside on networks themselves. Networking unquestionably increases value, but it also increases both the opportunities for

225. See, e.g., FTC Facebook Compl., *supra* note 33, ¶¶ 139-40 (quoting Facebook's policy that app developers "may not integrate, link to, promote, distribute, or redirect" to any competing platform, and alleging that the purpose was to "harm the prospects for – and deter the emergence of – competition").

226. See HOVENKAMP, *supra* note 26, § 2.2c.

227. See Hovenkamp & Scott Morton, *supra* note 6, at 8.

228. Complaint at ¶¶ 12-14, *Texas v. Google, LLC*, No. 4:20cv957 (E.D. Tex. Dec. 16, 2020) (alleging an agreement between Google and Facebook to restrain "header bidding," which was a system intended to make ad pricing more competitive by facilitating bidding among multiple ad exchanges).

229. See *supra* note 204. At the time of this writing Apple is rumored to be developing its own search engine, in part because of impending antitrust litigation. See Tim Bradshaw & Patrick McGee, *Apple Develops Alternative to Google Search*, FIN. TIMES (Oct. 28, 2020), <https://www.ft.com/content/fd311801-e863-41fe-82cf-3d98c4c47e26> [<https://perma.cc/D3NX-AB9F>].

230. See, e.g., *Meyer v. Kalanick*, 2020 WL 4482095, at *2-4 (S.D.N.Y. Aug. 3, 2020) (refusing to set aside the arbitrator's decision for the defendant); *Meyer v. Kalanick*, 291 F. Supp. 3d 526, 530 (S.D.N.Y. 2018) (acknowledging the price-fixing claim and granting the motion to compel arbitration); *Yellow Cab Co. v. Uber Tech., Inc.*, 2015 WL 4987653, at *5-6 (D. Md. Aug. 19, 2015) (refusing to dismiss the claim of driver price fixing under state antitrust law).

231. E.g., *California v. eBay, Inc.*, 2014 WL 4273888 (N.D. Cal. Aug. 29, 2014) (granting California's motion for preliminary approval of settlement in a case involving a labor antipoaching agreement between eBay and Intuit, Inc.).

anticompetitive behavior and its costs.²³² For example, refusals to deal are inherently more problematic in networked industries than in standalone markets where each firm ordinarily supplies its own inputs and finds its own sales. One cannot address competition problems without appreciating the system of rules and regulations that a market has put into place. That has consistently been true in Supreme Court rule of reason cases. For example, in *Chicago Board of Trade*, Justice Brandeis explained how a rule that nominally constituted price fixing actually made competition work better in that market.²³³ In *NCAA*, the Court condemned a horizontal restriction on televised games only after concluding that the restriction was not needed to further the kind of competition that organized collegiate football required.²³⁴ The Ninth Circuit lost sight of this in its *Qualcomm* decision, where it ignored the FRAND patent cross-licensing system and treated each firm as a standalone competitor.²³⁵ As a result, its decision threatens to undermine a system that has brought about considerable innovation and development in a competitive networked environment.

C. Coordinating Antitrust Remedies with Its Goals

Antitrust's provisions for public equitable relief are extremely broad, with no explicit restriction on the nature of the relief.²³⁶ The statute authorizing the federal government to seek equitable relief does not even contain the limitation common in other federal provisions that such relief be "in accordance with the principles of equity."²³⁷ A simple injunction, a radical breakup of a large firm into

232. See Herbert Hovenkamp, *FRAND and Antitrust*, 105 CORNELL L. REV. 1683, 1703, 1716 (2020); see also AREEDA & HOVENKAMP, *supra* note 9, ¶ 772 (advocating heightened dealing obligations in network industries).

233. *Bd. of Trade of Chi. v. United States*, 246 U.S. 231, 239 (1918) (explaining the functions of the challenged pricing rule).

234. *NCAA v. Bd. of Regents*, 468 U.S. 85, 103-05, 115 (1984) (explaining how an NCAA restriction on televised games was unnecessary for proper operation of NCAA football and was a naked restraint).

235. *FTC v. Qualcomm, Inc.*, 969 F.3d 974 (9th Cir. 2020).

236. 15 U.S.C. § 25 (2018) (authorizing the government "to prevent and restrain" antitrust violations).

237. For example, antitrust's *private* equity provision authorizes injunctive relief "when and under the same conditions and principles as injunctive relief against threatened conduct that will cause loss or damage is granted by courts of equity, under the rules governing such proceedings." 15 U.S.C. § 26 (2018); see also 35 U.S.C. § 283 (2018) (authorizing "injunctions in accordance with the principles of equity" under the Patent Act); 15 U.S.C. § 1116 (authorizing courts "to grant injunctions, according to the principles of equity" for trademark infringement); 17 U.S.C. § 1322 (2018) (regarding copyright design protection, court may "grant injunctions in accordance with the principles of equity").

small pieces, or many other kinds of relief would all appear to be *legally* possible if it rationally falls within the government's power to "prevent and restrain" antitrust violations. Nevertheless, the courts have crafted their own limits on the scope and nature of antitrust injunctions. For example, the Supreme Court has often stated that the purpose of an equitable antitrust remedy is to "restore competitive conditions."²³⁸ An appropriate remedy, however, can "curtail the exercise of liberties that the [defendant] might otherwise enjoy."²³⁹

Under the consumer-welfare principle, antitrust seeks to promote market output as large as is consistent with sustainable competition. Remedies should be designed to further that goal. One important ingredient in that determination is the duration of and harm caused by the monopoly. Another is the costs and benefits of the remedy itself.

The more durable the monopoly, the more costly it is to society. Most single-firm monopolies that last only a year very likely do not merit structural relief, because the cost of antitrust enforcement is high and its wheels turn slowly. As a result, antitrust challenges to firm dominance typically require an analysis of entry barriers, which considers whether monopoly is likely to be dissipated by new entry and, if so, how long that process will take.²⁴⁰

A well-designed breakup can increase competition. A poorly crafted one can deprive firms of scale economies or positive network effects, harming consumers more than it helps. A breakup can even ruin a firm. If the plaintiff is contemplating a breakup, the court should insist on additional evidence about necessity, effectiveness, and costs at the remedies stage. Accordingly, in *Microsoft* the D.C. Circuit vacated the district court's remedy judgment because it had failed to hold a hearing on the breakup question.²⁴¹

An antitrust remedy should be evaluated by its success in increasing output, decreasing prices, improving product quality, or spurring innovation—that is, by the same criteria that we generally adopt as goals for the antitrust laws. It is not antitrust's purpose to make firms smaller, unprofitable, or less efficient, nor to harm consumers by causing higher prices or reduced quantity or quality. Concerns about privacy, political power, or social and economic equality are of course relevant to legal policy generally, but they are not antitrust problems unless they also threaten to reduce output, raise prices, or restrain innovation.

238. *United States v. Int'l Harvester Co.*, 274 U.S. 693, 698–706 (1927); *see also* *United States v. E.I. du Pont de Nemours & Co.*, 366 U.S. 316, 326 (1961) ("The key to the whole question of an antitrust remedy is of course the discovery of measures effective to restore competition."); *United States v. Microsoft Corp.*, 253 F.3d 34, 47 (D.C. Cir. 2001) (describing the government's request for "relief as is necessary and appropriate to restore competition conditions").

239. *Nat'l Soc'y of Prof'l Eng'rs v. United States*, 435 U.S. 679, 697 (1978).

240. *See* AREEDA & HOVENKAMP, *supra* note 9, ¶¶ 420–23.

241. *See Microsoft*, 253 F.3d at 106–07.

At the same time, antitrust is not simply regulation by another name. Unlike command-and-control regulation, antitrust generally begins with the premise that markets should tend to themselves. It intervenes only when competition is threatened, and “restore competition” means what it says.

The discussion below considers how antitrust tribunals can further digital-platform competition without causing consumer harm or becoming excessively involved in the ongoing supervision of business conduct.

1. *Structural Relief, Limits on Defaults, and Other Injunctions*

a. *Remedies and Choice of Statute*

Section 2 of the Sherman Act is directed toward unilateral monopolistic conduct as well as attempts. Section 1 targets agreements of all kinds that restrain trade, and often condemns conduct when no individual firm has a dominant market position. As a general matter, the legal standard for section 1 is more aggressive than section 2, but it can be invoked only when there is a qualifying “agreement” involving two or more actors.²⁴²

One notable feature of the various antitrust complaints filed in late 2020 against Google and Facebook is the predominance of section 2 of the Sherman Act.²⁴³ The Antitrust Division’s complaint against Google proceeds entirely under section 2, as does the Colorado State AG complaint. The Texas Complaint does include a claim under section 1 of the Sherman Act, but that complaint also alleges an unlawful horizontal agreement between Facebook and Google. As for the Facebook complaints, the FTC’s complaint claims only violations of section 2.²⁴⁴ The state AGs’ complaint against Facebook includes a challenge to Facebook’s mergers under section 7 of the Clayton Act,²⁴⁵ and section 2 of the Sherman Act, but has no claim under section 1 of the Sherman Act.

The omission of any section 1 claims from nearly all of these complaints is striking since, by a rough estimate, at least three-quarters of the conduct described in them involves some kind of agreement. Normally it would be much easier to establish a violation of section 1 than of section 2. That said, there has been a trend toward the use of section 2 when the defendants have a

242. See generally AREEDA & HOVENKAMP, *supra* note 9, chs. 6-8 (discussing unilateral conduct); *id.* chs. 14-23 (discussing conduct involving agreement).

243. United States Google Compl., *supra* note 96; Colorado Google Compl., *supra* note 28.

244. See FTC Facebook Compl., *supra* note 32. The FTC cannot enforce the Sherman Act directly but does so via section 5 of the FTC Act. See 15 U.S.C. § 45 (2018).

245. See New York Facebook Compl., *supra* note 32, ¶¶ 263-72 (acquisition challenges to Instagram and WhatsApp acquisitions).

monopolistic market position, because its conduct requirements are less strict.²⁴⁶ That would explain bringing the actions under both statutes but does not obviously justify dropping section 1 altogether. Another possibility is the drafters' belief that including a section 1 issue would make structural relief less likely. Once again, that does not explain excluding section 1 claims altogether.

Aside from merger enforcement under section 7 of the Clayton Act, most antitrust relief is nonstructural. For example, in a rule-of-reason case, the remedy is usually an injunction against the challenged practice, although more pervasive violations or troublesome structures might require a divestiture. If the requested remedy is an injunction, the appropriate question is whether the restraint reduces output and raise prices of the *affected* transactions, not whether it increases the defendant's overall prices. In the *Amex* decision, however, both the Supreme Court and the lower courts assumed that condemnation of the defendant's rule (which prohibited a merchant from steering a customer to a less costly card) required a showing that overall prices increased as a result.²⁴⁷ In fact, however, each and every transaction affected by the antisteering rule resulted in both a higher price for the affected consumer and reduced profit for the affected merchant.²⁴⁸

For most antitrust problems outside the context of acquisitions, structural breakup is not a promising remedy. The history of deconcentration measures in American monopolization cases is not pretty.²⁴⁹ Requiring integrated firms to spin off specific plants or products will make them less attractive to consumers but will not inherently serve to dissipate market power in any particular product or service.

Entities and assets acquired by merger, however, present different issues. In some cases, acquired assets are eventually so completely integrated into the acquiring firm that the spinoff problem is not materially different from that of internally developed assets. In others, the degree of integration is less or acquisition lines remain distinct, and the undoing of mergers becomes a more promising remedy. For example, in its Facebook antitrust complaint, the FTC requests an order for Facebook to divest Instagram and WhatsApp, two

246. See, e.g., *Viamedia, Inc. v. Comcast Corp.*, 951 F.3d 429, 453 (7th Cir. 2020) (noting this difference between the two provisions).

247. *Ohio v. Am. Express Co.*, 138 S. Ct. 2274, 2287 (2018) (discussing whether prices "on the two-sided credit-card market as a whole" were higher); see also *id.* at 2292 (Breyer, J., dissenting) (arguing there was not evidence of higher prices overall in the record).

248. See Hovenkamp, *supra* note 181, at 741-42.

249. See generally William E. Kovacic, *Failed Expectations: The Troubled Past and Uncertain Future of the Sherman Act as a Tool for Deconcentration*, 74 IOWA L. REV. 1105, 1105 & n.4 (1989) ("To most students of antitrust, the history of Sherman Act deconcentration endeavors is largely a chronicle of costly defeats and inconsequential victories.").

companies that Facebook acquired, respectively, in 2012 and 2014.²⁵⁰ Both Instagram and WhatsApp continue as separate platforms with distinct membership.²⁵¹ Although the extent of integration between them and Facebook is significant, some of that integration occurred as recently as 2020.²⁵² Writers have suggested that even this integration was primarily gamesmanship to make an antitrust breakup more difficult.²⁵³ A more challenging problem is Android, which Google acquired in 2005 when it was still a tiny, financially troubled firm making software for digital cameras and mobile phones.²⁵⁴ Most of its development into a mature smartphone operating system occurred after this acquisition.²⁵⁵

One successful breakup of a unitary firm was that of AT&T, implemented by a 1982 antitrust consent decree.²⁵⁶ The AT&T network had been presumed to be a natural monopoly, but it lost that status as technological changes facilitated the growth of wireless communication. The breakup left the incumbent local exchange carriers intact for local service because they still depended on wired connections to each customer. However, long-distance service and the production

250. FTC Facebook Compl., *supra* note 33, at 51.

251. See INSTAGRAM, <https://www.instagram.com>; [<https://perma.cc/KNX7-SBXL>]; WHATSAPP, <https://www.whatsapp.com> [<https://perma.cc/QC67-797P>].

252. See Mike Isaac, *Now You Can Use Instagram to Chat with Friends on Facebook Messenger*, N.Y. TIMES (Sept. 30, 2020), <https://www.nytimes.com/2020/09/30/technology/Instagram-facebook-messenger-integration.html> [<https://perma.cc/NPY5-S3A7>].

253. See Melody Wang, “Unscrambling the Eggs”: *How to Unwind Harmful Mergers After They Have Closed*, 21 U.C. DAVIS BUS. L. J. 35, 38 (2021) (noting the extent to which Facebook previously kept WhatsApp and Instagram, but then recently began to integrate them).

254. See Ben Elgin, *Google Buys Android for Its Mobile Arsenal*, BLOOMBERG BUSINESSWEEK (Aug. 17, 2005), https://web.archive.org/web/20110205190729/http://www.businessweek.com/technology/content/aug2005/tc20050817_0949_tco24.htm [<https://perma.cc/QJ9J-YM9M>].

255. See Lisa Eadicicco, *The Rise of Android: How a Flailing Startup Became the World’s Biggest Computing Platform*, BUS. INSIDER (Mar. 27, 2015, 9:37 AM), https://www.businessinsider.com/how-android-was-created-2015-3_ [<https://perma.cc/G88W-7BJN>]; see also *Android (Operating System)*, WIKIPEDIA, [https://en.wikipedia.org/wiki/Android_\(operating_system\)](https://en.wikipedia.org/wiki/Android_(operating_system)) [<https://perma.cc/NLA3-GMPV>].

256. *United States v. Am. Tel. & Tel. Co.*, 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). For more history and also a regulatory perspective, see generally GERALD R. FAULHABER, *TELECOMMUNICATIONS IN TURMOIL: TECHNOLOGY AND PUBLIC POLICY* (1987); and Stephen G. Breyer, *Antitrust, Deregulation, and the Newly Liberated Marketplace*, 75 CALIF. L. REV. 1005 (1987), which both provide early commentary on the role of antitrust. For a lively but less technical account, see STEVE COLL, *THE DEAL OF THE CENTURY: THE BREAKUP OF AT&T* (1986). For a more panoramic history of the telecommunications network, including the breakup, see RICHARD R. JOHN, *NETWORK NATION: INVENTING AMERICAN TELECOMMUNICATIONS* (2010).

of instruments were divested and turned over to competition.²⁵⁷ The AT&T breakup carries some important lessons for anyone considering structural relief against a monopoly: identify those markets and assets where competition can be made to work well, and devise the remedy accordingly.

The structural breakup problem is more severe for digital platforms. First, breakups can decrease the scope of both direct and indirect network effects, resulting in loss of value. Second, setting aside externally acquired assets, the platforms are typically highly integrated. To be sure, a multidivisional firm such as Alphabet probably can be broken into separate parts that follow its corporate lines—perhaps one firm for the Android OS; another for application services such as Gmail and Google Search; and others for YouTube, Google Nest home products, and Waymo autonomous-driving technology.

But breaking apart noncompeting units does not necessarily increase the amount of competition. If a manufacturer makes 80% of the world's toasters and 75% of the world's blenders, compelling divestiture of one will yield one firm that makes 80% of the world's toasters and a second firm that makes 75% of the world's blenders. Because the two divisions are not competitors to begin with, we have done nothing to increase the amount of competition.

To do that, we need to break *into* the production of each product. We might force divestiture of half of the firm's toaster business and half of its blender business, spinning them off to other firms. This, however, can be a much more difficult thing to accomplish. The more integrated the primary company, the greater the difficulties. For example, if the firm makes its toasters in one plant with an integrated production line and blenders in a different plant, a divestiture that actually increases competition will likely require dismantling or restructuring the plants themselves.

Breaking up any platform subject to significant economies of scale threatens to be socially costly. It would force inefficiencies on all postbreakup constituents as well as cause consumer harm. For example, Amazon has roughly 67% of the market for ebooks.²⁵⁸ We might divest Amazon's ebook business and give it to a different firm. Currently, a user can call up a book title on Amazon and select from available formats, whether hardback, paperback, Kindle (ebook), or audio. Forcing a divestiture of Kindle would require a customer who wanted the ebook version to go to a different firm's website. Ebooks are sold by other resellers, including many of the publishers themselves. The principal impact of such a divestiture would be to make it less convenient for readers to select a book format.

257. See Randal C. Picker, *The Arc of Monopoly: A Case Study in Computing*, 87 U. CHI. L. REV. 523 (2020) (discussing details of the AT&T consent decree, including the divestiture of Western Electric and the competition for long distance).

258. *Ebook Industry News Feed*, ABOUT EBOOKS, <https://about.ebooks.com/ebook-industry-news-feed> [<https://perma.cc/N8KV-V7QN>].

That is not likely to be a consumer-welfare improvement, and it will do little to promote competition within the ebook industry.

In cases of significant economies of scale or network externalities, more promising remedies are compelled interoperability and information pooling. These could permit the emergence of more evenly competitive firms undermining scale economies, and could actually increase the range of positive network effects.²⁵⁹ Furthermore, these solutions are well within the range of ordinary Sherman Act remedies.

b. Anticompetitive Defaults

One promising nonstructural remedy for certain platforms is removal of defaults, which are presumptive product choices that a user can change. As DOJ's 2020 antitrust complaint against Google explains, Google Search is the default search engine on both iPhones and Android phones sold in the United States.²⁶⁰ The user can readily and at no cost switch to any one of several alternatives.²⁶¹ One problem with defaults, however, is that the person making the choice is typically not the person who is harmed. For example, the collective effect of individual users' low-impact decisions to accept a particular default search engine might be the costly exclusion of rivals.

Further, not all defaults are equally effective.²⁶² The government's antitrust complaint against Google alleges that defaults on mobile devices are "especially

259. See discussion *infra* Section II.C.2.b.

260. United States Google Compl., *supra* note 96, ¶¶ 45-47. On Europe, see Benjamin Edelman & Damien Geradin, *Android and Competition Law: Exploring and Assessing Google's Practices in Mobile*, 12 EUR. COMPETITION J. 159, 165-66 (2016); and Alexandre de Cornière & Greg Taylor, *On the Economics of the Google Android Case*, VOXEU (Aug. 15, 2018), <https://voxeu.org/article/economics-google-android-case> [<https://perma.cc/8ZW2-CNJ4>].

261. But Google may also use some absolute ties. See, e.g., Colorado Google Compl., *supra* note 28, ¶¶ 121-22 (alleging that Google absolutely requires Android device manufacturers to install Google's general search services as a default in order to also install the Google Play Store, its "must-have" application for the purchase of apps).

262. For a good and quite general study showing a wide variety of outcomes, see Jon M. Jachimowicz, Shannon Duncan, Elke U. Weber & Eric J. Johnson, *When and Why Defaults Influence Decisions: A Meta-Analysis of Default Effects*, 3 BEHAV. PUB. POL'Y 159 (2019). By contrast, default privacy settings in social-network sites have a strong effect on ultimate consumer choice. See Hichang Cho, Sungjong Roh & Byungho Park, *Of Promoting Networking and Protecting Privacy: Effects of Defaults and Regulatory Focus on Social Media Users' Preference Settings*, 101 COMPUTERS HUM. BEHAV. 1, 1 (2019) (finding defaults significantly affect users' privacy-preference settings when examining default setting as a contextual factor and regulatory focus as an individual-difference factor); *id.* ("[U]sers choose the defaults or alternatives proximal to them.").

sticky.”²⁶³ By contrast, Windows 10 for laptops and desktops comes with Microsoft Edge as the default browser and Bing as the default search engine. Nevertheless, usage data suggests that a very significant number of Windows 10 users swap away from Bing in favor of Google Search.²⁶⁴

U.S. antitrust law respecting defaults is very conservative. Further, the test for illegality depends on whether the conduct is unilateral or contractual. A challenge to a purely unilateral default imposed by a manufacturer on its own product would face very high burdens under a unilateral duty to deal standard. Most defaults, however, are the product of an agreement, as when one firm pays another for incorporating a default or licenses out its software subject to a default condition.

The closest antitrust analog for evaluating defaults is the law of tying arrangements, which as historically interpreted requires proof of absolute conditioning. Simply offering two products together without actually forcing the buyer to take both is not a tie.²⁶⁵ The Supreme Court has described ties with terms such as “forcing” or “coercion.”²⁶⁶ One factor that may be legally relevant, although it is not generally economically important, is that default mechanisms do not generally permit users to remove the default choice’s code, but only to add additional choices. For example, the ordinary user cannot remove Bing from Windows 10, although she can readily make it invisible and designate a different search engine as the default.

On the legality of defaults, the language of the antitrust statutes is helpful. Section 3 of the Clayton Act appears not to cover defaults at all. It requires a “condition, agreement, or understanding” that the buyer “not use or deal in the

263. United States Google Compl., *supra* note 96, ¶ 3; *see also* Colorado Google Compl., *supra* note 28, ¶ 105 (alleging more generally that consumers “tend to ‘stick’” to default search access points on browsers and other programs with search features).

264. While Windows enjoys about 35% of the global OS market across all devices, its preinstalled search engine Bing has a less than 3% market share. So as many as 90% of those who acquire a Windows 10 device reject the default search engine in favor of Google Search. *See Search Engine Market Share Worldwide – September 2020*, STATCOUNTER, <https://gs.statcounter.com/search-engine-market-share> [<https://perma.cc/KF48-VDY5>]. For other data, *see* Herbert Hovenkamp, *Antitrust and Information Technologies*, 68 FLA. L. REV. 419, 436 & nn.114-16, 437 & nn.117-18 (2016) [hereinafter Hovenkamp, *Antitrust and Information Technologies*], which reports data from *Tech Times*, *ZD Net*, and *Computerworld*.

265. *It’s My Party, Inc. v. Live Nation, Inc.*, 811 F.3d 676, 685 (4th Cir. 2016) (explaining that the concert promoter did not tie its venue to its promotion services, that artists were not forced to use the venue, and that only 14% of those who used the defendant’s promotion services also rented its venue); *see also* AREEDA & HOVENKAMP, *supra* note 9, ¶ 1752e (discussing the requirement of coercion, or conditioning).

266. *E.g.*, *Jefferson Par. Hosp. Dist. No. 2 v. Hyde*, 466 U.S. 2, 12 (1984) (describing ties as “forcing”); *Times-Picayune Publ’g Co. v. United States*, 345 U.S. 594, 605 (1953) (describing ties as “coerc[ion]”).

goods . . . of a competitor” of the seller.²⁶⁷ A simple default that permitted the user to switch to a competitor’s product would not fall within that language. The language of the Sherman Act is less restrictive. Section 1 reaches conduct that “restrain[s] . . . trade,”²⁶⁸ which refers to reduced output and higher prices. Section 2 prohibits those who “monopolize,” which requires unreasonable exclusion but does not specify the mechanisms.²⁶⁹ Whether a default satisfies either of the Sherman Act requirements presents a question of fact. In any event, there is a solid tradition of being less strict about tying or exclusive-dealing law’s categorical requirements when raised as part of a section 2 case against a monopolist.²⁷⁰ The ultimate question is not whether there is literal coercion, but whether the practice serves to exclude competition unreasonably. In that case, Google’s high market share in search makes the claim more plausible.

c. *Line-of-Business Restrictions*

A line-of-business restriction is a legal limit on the range of activities in which a firm can engage. Historically, legislatures concerned about corporate power feared that firms might increase their economic power by operating in markets outside their legitimate boundaries. In the nineteenth century, business corporations were limited to specific businesses specified in their charters.²⁷¹ That rule broke down in the late nineteenth century when corporate law treatise writers began to argue that it would be efficient for firms to engage in adjacent businesses. For example, it might be beneficial for a railroad to operate a coal mine or a hotel to the extent that these were ancillary to its principal business.²⁷² The general concern fell away entirely in the early twentieth century when states began amending corporation statutes to permit firms to engage in any lawful business.²⁷³

The idea survived in price-regulated industries, however. The argument became refocused on cross-subsidization, or the idea that a price-regulated

267. Clayton Act § 3, 15 U.S.C. § 14 (2018).

268. Sherman Act § 1, 15 U.S.C. § 1 (2018).

269. *Id.* § 2; cf. *United States v. Grinnell Corp.*, 384 U.S. 563, 570-71 (1966) (condemning “the willful acquisition or maintenance of [monopoly] power as distinguished from growth or development as a consequence of a superior product, business acumen, or historic accident”).

270. See AREEDA & HOVENKAMP, *supra* note 9, ¶ 777a.

271. See HERBERT HOVENKAMP, *ENTERPRISE AND AMERICAN LAW, 1836-1937*, at 59-65 (1991).

272. E.g., 1 VICTOR MORAWETZ, *A TREATISE ON THE LAW OF PRIVATE CORPORATIONS* §§ 364, 380 (Bos., Little, Brown, & Co. 2d ed. 1886); see Herbert Hovenkamp, *The Antitrust Movement and the Rise of Industrial Organization*, 68 TEX. L. REV. 105, 158-60 (1988).

273. See Herbert Hovenkamp, *The Law of Vertical Integration and the Business Firm: 1880-1960*, 95 IOWA L. REV. 863, 879 (2010).

monopoly might be able to integrate into unregulated markets in order to hide costs or subsidize operations. The debate over line-of-business restrictions was prominent in the breakup of AT&T, where the theory of the breakup was that the price-regulated, natural-monopoly aspects of the phone market should be segregated from unregulated portions.²⁷⁴ Many economists questioned the need for them,²⁷⁵ and they were largely removed in later legislation.²⁷⁶

Whether a line-of-business remedy is “structural” depends on the circumstances. If it applies only to future conduct, then it can be enforced by a simple injunction preventing a firm from entering a new line. A retroactive order, however, may require a firm to divest certain assets. For example, line-of-business restrictions prohibiting AT&T from manufacturing telephone instruments and equipment required the divestiture of its Western Electric subsidiary, which was subsequently dismantled.²⁷⁷ The debate over line-of-business restrictions has re-emerged with respect to the existing business of the large digital platforms and raises two interrelated questions: is it economically justifiable to segregate lines of economic activity when the firms in question are not price regulated and not shown to have a monopoly?

Important procompetitive rationales for business expansion into new lines are economies of scope and, relatedly, increasing the range of positive network effects. The issue can come up in myriad contexts, such as: Uber, a passenger carrier, integrates into food delivery; Amazon, a traditional book seller, adds ebooks; Apple migrates its software and other technology from Mac computers into iPhones; Google offers both an Android OS and Google Search on the same device; Microsoft, whose principal product is the Windows OS, begins producing devices such as the Microsoft Surface; Amazon, a large platform retailer of products supplied by numerous merchants, begins supplying its own brands.

Supporters of business-line expansion emphasize economies of scope or broader network effects; detractors see improper leverage or related abuses

274. *E.g.*, *United States v. W. Elec. Co.*, 894 F.2d 1387, 1391 (D.C. Cir. 1990) (affirming line-of-business restrictions designed to avoid cross-subsidization); see Joseph D. Kearney & Thomas W. Merrill, *The Great Transformation of Regulated Industries Law*, 98 COLUM. L. REV. 1323, 1351-53 (1998).

275. *E.g.*, Kenneth J. Arrow, Dennis W. Carlton & Hal S. Sider, *The Competitive Effects of Line-of-Business Restrictions in Telecommunications*, 16 MANAGERIAL & DECISION ECON. 301, 311 (1995) (arguing that eliminating the remaining line-of-business restrictions on AT&T would be beneficial); Daniel F. Spulber, *Deregulating Telecommunications*, 12 YALE J. ON REG. 25, 63-66 (1995) (similar).

276. See Howard A. Shelanski, *Adjusting Regulation to Competition: Toward a New Model for U.S. Telecommunications Policy*, 24 YALE J. ON REG. 55, 63-64 (2007).

277. See *United States v. W. Elec. Co.*, 569 F. Supp. 1057, 1120-23 (D.D.C. 1983).

because operation in a primary market gives the firm a competitive advantage in a secondary market.

One prominent characteristic of digital technology is fixed costs, which decline per unit as output increases. Another characteristic is joint costs, which are costs that are shared across multiple product lines and give multi-product output a comparative advantage. For example, it is far less costly for Uber to add food delivery to its existing network of dispatch software and drivers than for someone to begin a new enterprise for that purpose. These same arguments apply to network effects. The ability to aggregate products or services improves the experience for both users and suppliers.

Amazon's sales of both third-party and house brands from the same site have provoked calls for platform separation.²⁷⁸ Critics cite evidence that Amazon sometimes takes advantage of information supplied by third-party merchants to copy products and sell them under its own label. Defenders of Amazon's practice observe that the principal impact is to force sellers of name brands to reduce their prices.²⁷⁹

While there does not appear to be a study, there are intuitive reasons to think that the competitive impact of house brands such as AmazonBasics shows up much more vis-à-vis competitors who have established brands with large volumes and high margins. These would include brands such as Duracell (household batteries), Black & Decker (small appliances), Samsonite (luggage), 3M (consumable office supplies), and Sylvania (lamps and bulbs). New entry is more profitable as the volume and margins of existing products are higher. These other companies are all large firms whose products compete with Amazon house brands. However, Amazon may also be taking advantage of some small sellers by copying their brands and underselling them. In other cases where outside sellers purchase from a separate manufacturer, Amazon may obtain a deal directly from that manufacturer.²⁸⁰

Given these facts, forcing global platform segregation on Amazon is egregious and harmful overkill. Further, it is unclear that it will even achieve any competitive benefits. If a product can be lawfully copied the copyist need not be currently selling the product on its own website. It is unclear whether nonpublic information that third-party merchants supply to Amazon facilitates this copying. Anyone can obtain an item for purposes of reverse engineering, and Amazon's public product reviews supply a great deal of information. That same

278. See Hovenkamp, *supra* note 23, at 60-61.

279. *Id.* at 60-62.

280. See Dana Mattioli, *How Amazon Wins: By Steamrolling Rivals and Partners*, WALL ST. J. (Dec. 22, 2020), <https://www.wsj.com/articles/amazon-competition-shopify-wayfair-allbirds-antitrust-11608235127> [<https://perma.cc/2XTQ-PGFC>].

principle applies to Amazon's attempts to deal directly with manufacturers in order to circumvent third-party merchants. Amazon can do this whether or not a third party is already selling a product on Amazon. If forbidden to compete with its own third-party merchants, Amazon would be more likely to dump the third party's product and sell only its own.

Second, Amazon has no right to infringe a merchant's intellectual-property rights, but these merchants have no right to high margins free from Amazon's competition. In any event, remedies from intellectual property or tort law might be appropriate. But it is difficult to see why practices resulting in higher volume and lower prices should justify structural separation under the antitrust laws.

d. The Comparative Advantage of Tailored Injunctions

While not all antitrust injunctions are socially beneficial, they are more narrowly focused than divestitures and their results are typically easier to predict. Determining harms and benefits from judicially mandated restructuring of firms is difficult. The point is not that structural remedies are categorically bad, but that no antitrust remedy should be compelled without a relatively clear appreciation of the likely effects. As with all antitrust remedies, the goal should be to increase postrelief output. Higher output will benefit consumers as well as labor and suppliers. Too often, well-intended divestitures or structural separations end up doing precisely the opposite.²⁸¹

A properly designed injunction can actually accomplish more than divestiture. For example, a remedy against Google's practice of preinstalling Google Search on Android need not require asset divestiture. It could also be remedied by an injunction that simply halted the practice and directly provided purchasers of new Android devices a startup menu to select from competing search engines.²⁸² This very sort of injunction resulted from the EU's July 2018 *Android* decision.²⁸³ Under that remedy, upon initial startup of a new device the Android

281. See Robert W. Crandall, *The Failure of Structural Remedies in Sherman Act Monopolization Cases*, 80 OR. L. REV. 109, 197 (2001) (arguing that most divestitures in monopolization cases have failed to improve competition or consumer welfare). One commonly given example is the *Standard Oil* decree, which broke that company into 34 firms. *United States v. Standard Oil Co. of N.J.*, 173 F. 177, 198-99 (E.D. Mo. 1909); see also *Standard Oil Co. of N.J. v. United States*, 221 U.S. 1, 37 n.1 (1911) (listing Standard Oil's assets). Soon after the breakup, the price of gasoline rose, although whether the increase was caused by the breakup has not been established. See FTC, REPORT ON THE PRICE OF GASOLINE IN 1915, at 1 (1917).

282. This proposal was made in Hovenkamp, *Antitrust and Information Technologies*, *supra* note 264, at 436-37.

283. Case AT.40099, *Google Android*, C(2018) 4761, ¶¶ 1214, 1401 (July 18, 2018), https://ec.europa.eu/competition/antitrust/cases/dec_docs/40099/40099_9993_3.pdf [https://perma.cc/P6WJ-U6EZ] (noting that preinstallation of competing search engines would have

screen lists a number of alternative general search engines, and the customer can select one. Placement on the list is determined by competitive bid. Android's own information page on this process shows a screen giving new users a choice among four search engines: Yahoo, DuckDuckGo, Google, and Bing.²⁸⁴ The same can be said of Facebook's rules prohibiting app developers from competing with it or from servicing other firms who do.²⁸⁵ a narrow injunction should remedy the problem.

Divestitures often end up being either too broad or too narrow in relation to the harm they seek to rectify. For example, Apple and Google Android are distinct and competing firms. Nevertheless, Google Search has also been the preinstalled default search engine on most Apple devices as well²⁸⁶ – very likely because Google pays heavily for that privilege, as the government's antitrust complaint against Google alleges.²⁸⁷ The practice of making such payments could also be enjoined. In contrast to divestiture, the injunctive remedy can confront the practice directly. Divesting Google Search may do no more than reassign it to a different firm that goes right on making the same payments to Apple.

Divestiture is also a blunt instrument. A firm or subsidiary is economically a nexus of contracts operating under state-imposed structural rules of corporate law.²⁸⁸ One problem with divestiture along firm or divisional lines is that it defers to corporate forms to separate the entire bundle, even though only one or a

created more competition in search traffic, that Google was willing to pay large sums to be the default search engine on some devices, and that installing a single search engine as a default increased that search engine's traffic by a factor of two to three); see Katie Collins, *Google Won't Be Default Search Engine for Android Users in EU Next Year*, CNET (Aug. 2, 2019, 3:35 AM PT), <https://www.cnet.com/news/google-to-prompt-eu-android-users-to-choose-a-search-engine-within-chrome> [<https://perma.cc/HH8W-CQGT>].

284. *About the Choice Screen*, ANDROID, <https://www.android.com/choicescreen> [<https://perma.cc/YW42-KUC5>]. The choice-screen approach has led to some objections by Google's rivals, mainly that the auction process is biased or does not offer enough options, but at this writing these have not been resolved. See *Some Google Search Rivals Lose Footing on Android System*, WALL ST. J. (Sept. 28, 2020), <https://www.wsj.com/articles/some-google-search-rivals-lose-footing-on-android-system-11601289860> [<https://perma.cc/5KBN-LCLZ>].

285. See discussion *supra* notes 220–223.

286. Pinar Akman, *A Preliminary Assessment of the European Commission's Google Android Decision*, COMPETITION POL'Y INT'L ANTITRUST CHRON., Dec. 2018, at 4 n.13, <https://ssrn.com/abstract=3310223> [<https://perma.cc/T7AM-499F>].

287. United States Google Compl., *supra* note 96, ¶ 119. In addition, Google paid Mozilla \$1 billion in 2011 to be the default search engine on Firefox. See Hanley, *supra* note 67, at 298–99.

288. See, e.g., OLIVER E. WILLIAMSON, *THE ECONOMIC INSTITUTIONS OF CAPITALISM: FIRMS, MARKETS, RELATIONAL CONTRACTING* 295 (1985) (analyzing corporate structure through the nexus of contracts); Michael C. Jensen & William H. Meckling, *Theory of the Firm: Managerial Behavior, Agency Costs, and Ownership Structure*, 3 J. FIN. ECON. 305, 310–11 (1976) (introducing the “nexus of contracts” terminology).

few contracts in the bundle might be harmful. Often one can accomplish the segregation of the operating system and search in more focused ways.

When it works properly, antitrust's rule of reason enables courts to provide relief that focuses more narrowly on the specific practices harming competition. Consider the *NCAA* case, which was a challenge to an NCAA rule that limited the number of nationally televised games that any single team could play.²⁸⁹ Once the Supreme Court found that limitation unlawful, it could have dissolved the NCAA. It took that approach a century earlier in *Trans-Missouri Freight*, breaking up a joint venture that was efficient in many other respects in order to discipline the venture's price fixing.²⁹⁰ But a breakup of the NCAA would also have brought to an end all of the benefits—like organizing the market for inter-collegiate sports—that the NCAA was able to accomplish through joint action. In this case, the harm was much more effectively addressed by a focused decree enjoining the limitation on games. After that, the member schools could compete for televised game contracts. Immediately postdecree, the number of annually televised games more than doubled, from 89 to more than 200.²⁹¹

e. Administrability

An advantage traditionally asserted for structural remedies is that they permit competition to emerge without the need for ongoing judicial administration. By contrast, one of the downsides of injunctions is that they may require ongoing court supervision. While this critique is valid for some injunctive remedies, it is not for others. The task for the court should be to design remedies that will permit the market rather than continued judicial supervision to determine postrelief competition. In a case such as *NCAA*, which condemned the NCAA's limitation on televised games, this is relatively easy. Given a very large number of colleges in the NCAA, plus the fact that televised games can readily be observed (making a surreptitious agreement impossible), a narrow injunction should be sufficient to promote competition. Each school can then decide for itself how many games to broadcast. In general, injunctions work well for collaborative activity where competition can be expected to emerge in the postinjunction market, as it did in *NCAA*. In the case of Facebook's limitations

289. *NCAA v. Bd. of Regents*, 468 U.S. 85, 88-90 (1984).

290. *United States v. Trans-Mo. Freight Ass'n*, 166 U.S. 290, 308, 343 (1897) (granting the government's request to dissolve a joint venture because the venture fixed freight rates). On the efficiency of the *Trans-Missouri* venture, which had led both the Interstate Commerce Commission and the Eighth Circuit below to approve it, see HOVENKAMP, *supra* note 26, § 5.2(a)(1).

291. See BRIAN L. PORTO, *THE SUPREME COURT AND THE NCAA: THE CASE FOR LESS COMMERCIALISM AND MORE DUE PROCESS IN COLLEGE SPORTS* 75-77 (2012).

on application developers competing with it, a simple injunction should also put the choice to the application developers themselves.²⁹²

In other situations, injunctive remedies for single-firm conduct can be more difficult to devise and enforce. For example, a court might attempt to remedy an unlawful refusal to deal by issuing an injunction that compels dealing. However, it would then have to determine the scope and terms of any forced dealing and would almost certainly be called on later when disputes arose.²⁹³ In so doing, the court would effectively become a regulator. In that case, a stronger argument can be made for a structural decree that makes the market more competitive.

In other cases, an effective mechanism may already be in place for administering duties to deal. For example, an antitrust dealing order was deemed unnecessary in *Verizon Communications Inc. v. Law Offices of Curtis Trinko, LLP*, in part because dealing orders were already being enforced by regulatory agencies acting under the Telecommunications Act.²⁹⁴ Similarly, in cases involving violations of prior commitments to license patents out on fair, reasonable, and non-discriminatory (FRAND) terms, either district courts make these determinations or, in some cases, the FRAND agreement specifies arbitration procedures to resolve disputes.²⁹⁵

By taking away antitrust law as an enforcement tool, even in cases involving competitive harm and higher prices, the Ninth Circuit's recent decision in *FTC v. Qualcomm Inc.* threatens this fragile system.²⁹⁶ Qualcomm, a dominant firm, had reneged on its FRAND obligations in numerous ways that also seemed to amount to clear antitrust violations, rejecting a well-supported district court's conclusions.²⁹⁷ Until now, the private FRAND-contract-enforcement system

292. See *supra* notes 97, 225 and accompanying text.

293. Cf. AREEDA & HOVENKAMP, *supra* note 9, ¶ 771b (developing these objections to essential-facility claims).

294. 540 U.S. 398, 413 (2004) (calling the New York Public Service Commission and the Federal Communications Commission “effective steward[s] of the antitrust function” in the heavily regulated telecommunications sphere).

295. See, e.g., *Microsoft Corp. v. Motorola, Inc.*, 795 F.3d 1024, 1037-39 (9th Cir. 2015) (rejecting a challenge to a district court's ability to determine FRAND royalties where the challenging party had earlier consented to the district court's making such a determination); *HTC Corp. v. Telefonaktiebolaget LM Ericsson*, No. 6:18-CV-00243, 2018 WL 5831289, at *11-12 (E.D. Tex. Nov. 7, 2018) (submitting a FRAND royalty dispute to arbitration). See generally Herbert Hovenkamp, *FRAND and Antitrust*, 105 CORNELL L. REV. 1683 (2020) (discussing the intersection between FRAND commitments and antitrust).

296. 969 F.3d 974, 1005 (9th Cir. 2020), *rev'g* 411 F. Supp. 3d 658 (N.D. Cal. 2019).

297. *Id.* at 986-88, 997-1003. For an antitrust analysis of *Qualcomm*, see Hovenkamp, *supra* note 295, at 1685-95, 1701-04.

had proven incapable of restraining such conduct.²⁹⁸ Wisely, the FTC did not seek to break up the FRAND collaborative system but only to enjoin particular abuses. Without an antitrust remedy, a likely result is that other firms will do the same thing. The system of voluntary innovation sharing that the FRAND system contemplates may fall apart. If that happens, Congress will have to step in.

2. *More Creative Alternatives*

Frequently, neither simple injunctions nor simple breakups will be good solutions for platform monopoly. Injunctions may be inadequate to restore competition, and breakups may impair efficient operation and harm consumers in the process.

The case for a breakup is strongest when noncompetitive performance or conduct seems to be inherent in a firm's current structure. Even then, however, there is no guarantee that the firm, once dismantled, will perform any better than before. For example, how do we break up Facebook without harming the constituencies that it serves?

The approaches discussed briefly in this Section do not require the breakup of assets or the spinoff of divisions or subsidiaries other than some that have been acquired by merger. Rather, they alter the nature of ownership, managerial decision making, contracts, intellectual-property licenses, or information management. Instead of attempting to force greater competition between a dominant platform and its rivals, we might do better to leave the firm intact but encourage more competition *within* it. Alternatively, we might increase interoperability by requiring more extensive sharing of information or other inputs. While the current antitrust statutes grant the courts equitable power sufficient to accomplish these remedies,²⁹⁹ the proposals are novel and could provoke resistance.

These remedies can be applied to entities other than structural monopolies, and for offenses under both section 1 and section 2 of the Sherman Act. While less intrusive than asset breakups, however, they can be more intrusive than simple conduct injunctions. As a result, they should be limited to situations where prohibitory injunctions alone are unlikely to be adequate. Occasional uses of

298. For example, in an amicus brief, former FTC Chair Timothy J. Muris documented the extent to which Qualcomm had been able to evade FRAND royalty requirements and charge significantly higher prices. See Brief of Amicus Curiae Timothy J. Muris in Support of Appellee at 5-6, 12-14, *Qualcomm*, 969 F.3d 974 (No. 19-16122), 2019 WL 6683006.

299. See 15 U.S.C. § 25 (2018); *supra* notes 236-239 and accompanying text. The subsequent section, 15 U.S.C. § 26 (2018), offers equally broad remedies for private parties, provided that the "threatened conduct . . . will cause loss or damage."

unlawful exclusive dealing, most-favored-nation agreements,³⁰⁰ or other anti-competitive contract practices deserve an injunction, but ordinarily would not merit a breakup of the entire firm or fundamental alteration of its management structure.

The traditional way that antitrust law applies structural relief is to break up firms' various physical assets, through such devices as forcing selloffs (divestiture) of plants, products, or subsidiaries.³⁰¹ To the extent these breakups interfere with a firm's production and distribution, they can produce harmful results such as increased costs or loss of coordination. This is particularly true of integrated production units, such as single digital platforms. The D.C. Circuit noted this concern in *Microsoft* when it refused the government's request for a breakup.³⁰²

a. Enabling Competition Within the Platform

One alternative to divestiture is to leave a platform's physical assets and range of participants intact but change the structure of ownership or management so as to make it more competitive internally. A platform or other organization can itself be a "market" within which competition can occur. In that case, antitrust law can be applied to its internal decisions, improving competition without limiting the extent of scale economies or beneficial network effects.

Ordinarily, agreements among subsidiaries or other agents within a firm are counted as unilateral and so are attributed to the firm itself.³⁰³ That rule is a direct consequence of the separation of ownership and control. The all-important

300. A most-favored-nation clause (MFN) gives the dominant contracting firm better terms than those offered to any rival. See AREEDA & HOVENKAMP, *supra* note 9, ¶ 1807(b)(1). For a discussion of large digital platforms' use of MFNs, see Jonathan B. Baker & Fiona Scott Morton, *Antitrust Enforcement Against Platform MFNs*, 127 YALE L.J. 2176, 2181-86 (2018).

301. For a comprehensive survey of Supreme Court antitrust-divestiture decisions, see E. Thomas Sullivan, *The Jurisprudence of Antitrust Divestiture: The Path Less Traveled*, 86 MINN. L. REV. 565, 568-69 & n.15 (2002).

302. *United States v. Microsoft Corp.*, 253 F.3d 34, 105-06 (D.C. Cir. 2001) (noting Microsoft's testimony that the company was neither the product of mergers and acquisitions nor organized along product lines and that the company operated out of a single integrated facility).

303. See, e.g., *Copperweld Corp. v. Indep. Tube Corp.*, 467 U.S. 752, 771 (1984) ("[T]he coordinated activity of a parent and its wholly owned subsidiary must be viewed as that of a single enterprise for purposes of § 1 of the Sherman Act."); *Siegel Transfer, Inc. v. Carrier Express, Inc.*, 54 F.3d 1125, 1135-37 (3d Cir. 1995) (holding that a firm did not conspire with its own employee, even if the employee had an economic interest in a competing firm); *Borg-Warner Protective Servs. Corp. v. Guardsmark, Inc.*, 946 F. Supp. 495, 499 (E.D. Ky. 1996) (stating that, for purposes of section 1 of the Sherman Act, a firm is incapable of conspiring with its employees), *aff'd*, 156 F.3d 1228 (6th Cir. 1998). For a discussion of the voluminous caselaw on intra-enterprise conspiracy, see AREEDA & HOVENKAMP, *supra* note 9, ¶¶ 1463-74.

premise, however, is that the firm's central management is the only relevant economic decisionmaker. When that is not the case, even agreements among the various constituents within the firm can be treated as cartels.

There is plenty of precedent on this issue. The history of antitrust law is replete with examples of incorporated firms that are owned or managed by distinct and often competing entities. The courts have treated these firms as cartels or joint ventures, even for practices that, from a corporate law perspective, appeared to be those of a single firm. If properly managed, the result can be to force entities within the same incorporated organization to behave competitively vis-à-vis one another.

Firms whose ownership is reorganized in this fashion can still be very large and retain most of the attributes of large firms. On the one hand, this will satisfy those concerned that the breakup of large firms can result in the loss of economies of scale or scope, or of other synergies that generally lead to high output and lower prices. On the other hand, it will not satisfy those who believe that "big is bad" for its own sake.³⁰⁴

Joint management of unified productive assets has a storied history that goes back to the Middle Ages. Farmers, ranchers, and fishermen produced cattle, sheep, and fish on various "commons," or facilities that were shared among a large number of owners and subjected to management rules.³⁰⁵ Many of these operated on a mixed model that involved individual production for stationary products such as crops, but a commons for grazing cattle or other livestock.

For mobile products such as cattle or fish, the costs of shared management were lower than the costs of creating or maintaining boundaries. That was not the case for radishes or wheat. So rather than cutting a large pasture or bay into 100 fenced-off plots, participating property owners operated it as a single economic unit, substituting management costs for fencing costs. Just as for any firm, size and shape are determined by comparing the costs and payoffs of alternative forms of organization.³⁰⁶

So while a commons can be a very large firm, it can be operated by a collaboration of competing entities rather than a single one. Output reductions and price setting by a single firm are almost always out of reach of the federal

304. See *supra* note 3 and accompanying text.

305. See, e.g., ELINOR OSTROM, *GOVERNING THE COMMONS: THE EVOLUTION OF INSTITUTIONS FOR COLLECTIVE ACTION* 61-65 (1990) (discussing how residents in Törbel, Switzerland designed governing institutions to manage communal property).

306. See generally R. H. Coase, *The Nature of the Firm*, 4 *ECONOMICA* 386, 390-98 (1937) (explaining the market forces that motivate the formation of firms). For a competitive analysis of the governance choices for a commons, see CHRISTINA BOHANNAN & HERBERT HOVENKAMP, *CREATION WITHOUT RESTRAINT: PROMOTING LIBERTY AND RIVALRY IN INNOVATION* 327-338 (2012).

antitrust laws. On the other hand, if a market is operated by a joint venture of active business participants, their pricing is subject to the laws against collusion. Their exclusions also operate under the more aggressive standards that antitrust applies to concerted, as opposed to unilateral, refusals to deal.³⁰⁷ The fact that this joint venture is a corporation organized under state law, as many ventures are, does not make any difference. It is still a collaboration as far as antitrust law is concerned.

The theory of the firm precludes claims of an antitrust conspiracy between a corporation and its various subsidiaries, officers, shareholders, or employees. This preclusion is an essential corollary to the proposition that a corporation is a single entity for most legal purposes and not simply a cartel of its shareholders or other constituent parts. This is how corporate law preserves the boundary between firms and markets.³⁰⁸

But important exceptions exist. While a corporation is a single entity for most antitrust purposes, if it is operated by its shareholders for the benefit of their own separate businesses, its conduct is reachable under section 1 of the Sherman Act. A cartel is still a cartel even if it organizes itself into a corporation.

The classic antitrust example of such a collaborative structure is in the 1918 *Chicago Board of Trade* case, which first articulated the modern rule of reason for antitrust cases.³⁰⁹ As Justice Holmes had described the Board thirteen years previously,³¹⁰ it was an Illinois state-chartered corporation whose 1600 members were themselves traders for their own individual accounts, and with individual exclusive rights to do business on the Board's trading floor.³¹¹ The "call rule," which prevented collaborative price making among the members except during exchange hours, could not have been challenged under the antitrust laws as unilateral conduct. A single firm may set any nonpredatory price it wishes. Further, all of the relevant participants were inside the firm. Nevertheless, they were

307. For an extensive discussion of the law governing such arrangements, see AREEDA & HOVENKAMP, *supra* note 9, ¶¶ 2220-24.

308. See Edward B. Rock, *Corporate Law Through an Antitrust Lens*, 92 COLUM. L. REV. 497, 505-19 (1992).

309. *Bd. of Trade of Chi. v. United States*, 246 U.S. 231, 238 (1918) (stating a formulation of the rule of reason).

310. *Bd. of Trade of Chi. v. Christie Grain & Stock Co.*, 198 U.S. 236, 247 (1905) ("[The Board is] a great market, where, through its eighteen hundred members, is transacted a large part of the grain and provision business of the world."). Justice Holmes observed that the Board "was incorporated by special charter of the State of Illinois." *Id.* at 245. The Board having a special charter means that it was created by the state legislature rather than through a general incorporation statute. In the 1918 decision, Justice Brandeis relied on Justice Holmes's earlier decision to describe the Board's corporate structure and operations. See *Bd. of Trade of Chi.*, 246 U.S. at 235-36.

311. *Bd. of Trade of Chi.*, 246 U.S. at 235-36.

regarded as independent actors for the purpose of trading among themselves. Thus the United States challenged the call rule as price fixing among competitors.³¹²

Not only is the substantive law against such collaborative activity more aggressive than that against unilateral actions, but the remedial problems are less formidable. If a firm acting unilaterally should set an unlawful price, the court must order it to charge a different price, placing it in the awkward position of a utility regulator. By contrast, price fixing by multiple independent actors operating in concert is remedied by a simple order against price fixing, requiring each participant to set its price individually without dictating what the price must be. The Supreme Court ultimately found the Chicago Board's call rule to be lawful. If it had not, however, the remedy would have been an injunction against enforcement of the rule, leaving the members free to set their own prices. In fact, the United States' requested relief was precisely that.³¹³

The same thing applies to refusals to deal. If a firm is acting unilaterally, its refusal to deal is governed by a strict standard under which liability is unlikely, particularly if there has not been an established history of dealing.³¹⁴ Further, in many circumstances a court can enforce a dealing order only by setting the price and other terms. By contrast, if the entity that refuses to deal is operated by a group of active business participants, its collective refusal to deal is governed by section 1 of the Sherman Act. A court usually need do no more than issue an injunction against the agreement not to deal. This is true even if the actors have incorporated themselves into a single business entity, as in the *Associated Press* case, which involved a New York corporation whose members were 1200 newspapers.³¹⁵ The government charged the Association with "combining cooperatively" to prohibit news sales to nonmembers or making it more difficult for a newspaper to enter competition with an existing newspaper.³¹⁶ The Court upheld an injunction against the restrictive rules under the Sherman Act.³¹⁷

312. See *id.* at 237 (noting that under the call rule "members were prohibited from purchasing or offering to purchase" at any price other than the closing price when the market was closed).

313. *Id.* (describing the suit "to enjoin the enforcement of the [c]all rule, alleging it to be in violation of the Anti-Trust law.").

314. See *Verizon Commc'ns, Inc. v. Law Offices of Curtis V. Trinko, LLP*, 540 U.S. 398, 409 (2004) (limiting the scope of unlawful unilateral refusals to deal); AREEDA & HOVENKAMP, *supra* note 9, ¶ 772(d)(3).

315. *Associated Press v. United States*, 326 U.S. 1, 3-4 (1945).

316. *Id.* at 6.

317. *Id.* at 23. The same thing occurred under section 5 of the FTC Act in *Fashion Originators Guild of Am., Inc. v. FTC*, 312 U.S. 457 (1941), which involved a New York corporation with fifteen members. Once again, the Court affirmed an injunction against a concerted refusal to deal.

The modern business world provides many analogies to this structural situation. For example, each of the NCAA's 1200 member schools operates as a single entity in the management of education, student housing and discipline, and financing of its own operations, including athletic departments. By contrast, the rules for recruiting and maintaining athletic teams, their compensation, as well as the scheduling, operation, and playing rules of games, are controlled through rulemaking by the collective group.³¹⁸ While the schools compete with one another in recruiting athletes and coaches, in obtaining both live and television audiences, and in the licensing of intellectual property, all of these things fall within NCAA rulemaking and are reachable by antitrust law. Specifically, decisions to restrict the number of televised games;³¹⁹ to limit the compensation of coaches³²⁰ or players;³²¹ or to limit licensing of students' names, images, and likenesses³²² all fall within section 1 of the Sherman Act. When a violation is found, the antitrust remedy is an injunction permitting each team to determine its choices individually.

The same analysis drove the *American Needle* litigation, a refusal-to-deal case that involved the National Football League (NFL).³²³ The NFL is an unincorporated association controlled by thirty-two individual football teams, each of which is separately owned. NFL Properties (NFLP) is a separate, incorporated LLC in New York, controlled by the NFL. The individual teams are members, and they also collectively control the licensing of the teams' substantial and individually owned intellectual-property rights. In this case, the team members voted to authorize NFLP to grant an exclusive license to Reebok to sell NFL-logged headwear (i.e., helmets and caps) for all thirty-two teams.³²⁴ The

See Brief for the FTC, *Fashion Originator's Guild of Am. v. FTC*, 312 U.S. 457 (1941) (No. 537), 1941 WL 76666, at *4 (describing the corporation's structure).

318. *Membership*, NAT'L COLLEGIATE ATHLETIC ASS'N (NCAA), <https://www.ncaa.org/about/who-we-are/membership> [<https://perma.cc/4C73-4NVV>].

319. *NCAA v. Bd. of Regents*, 468 U.S. 85, 88 (1984).

320. *Law v. NCAA*, 5 F. Supp. 2d 921, 933-34 (D. Kan. 1998) (condemning wage fixing of lower-level basketball coaches).

321. See *Alston v. NCAA* (*In re NCAA*), 958 F.3d 1239, 1243-44 (9th Cir. 2020) (condemning "rules that restrict the education-related benefits" that member institutions can offer student athletes), *cert. granted*, No. 20-512, 2020 WL 7366281 (Dec. 16, 2020); *O'Bannon v. NCAA*, 802 F.3d 1049, 1052-53 (9th Cir. 2015) (condemning restraints on student-athlete compensation). Note that the *Alston* certiorari grant concerns the application of the rule of reason, not the NCAA's status as a single entity.

322. See *In re NCAA Student-Athlete Name & Likeness Licensing Litig.*, 37 F. Supp. 3d 1126, 1155 (N.D. Cal. 2014).

323. *Am. Needle, Inc. v. NFL*, 560 U.S. 183, 189-96 (2010).

324. *Id.* at 187-88.

plaintiff, American Needle, was a competing manufacturer that the agreement excluded.³²⁵

The issue for the Supreme Court was whether NFLP's grant of an exclusive license should be addressed as a "unilateral" act of NFLP or as a concerted act by the thirty-two teams acting together, and the Court unanimously decided the latter.³²⁶ As a matter of corporate law, the refusal to deal appeared to be unilateral. NFLP, the licensing party, was an incorporated single entity. The lower court had relied on earlier Seventh Circuit decisions holding that professional sports leagues should be treated as single entities under these circumstances.³²⁷ The Supreme Court's decision to the contrary was consistent with its earlier cases *Sealy*³²⁸ and *Topco*.³²⁹ In both of those cases, the Court held that even if an entity is incorporated, it can be addressed as a collaboration of its competing and actively participating shareholders. In *Sealy*, each member was a shareholder, and collectively the members owned all of *Sealy*'s stock.³³⁰ In *Topco*, each of the twenty-five members owned an equal share of the common stock, which had voting rights. They also owned all of the preferred stock, which was nonvoting, in proportion to their sales.³³¹

Agreements among the active members or shareholders on incorporated real-estate boards are treated in the same way. Acting as a single entity, the board organizes the listing of properties for sale, formulates listing rules, promulgates standardized listing forms and sales agreements, and controls much of the conduct of individual brokers. Acting individually, the shareholder-brokers show properties to clients and obtain commissions from sales. Each real-estate office acts as not only a shareholder or partner in the overall organization, but also a competitor for individual real-estate sales.

Without discussing single-entity status, in 1950 the Supreme Court held that price fixing among real-estate agents who were members of an incorporated board was an unlawful conspiracy.³³² A leading subsequent decision involved

325. *Id.* at 187.

326. *Id.* at 196.

327. *Am. Needle, Inc. v. NFL*, 538 F.3d 736, 738 (7th Cir. 2008) (citing *Chicago Professional Sports Ltd. v. NBA*, 95 F.3d 593, 597-600 (7th Cir. 1996)).

328. *United States v. Sealy, Inc.*, 388 U.S. 350, 351-58 (1967) (finding territorial restraints and price fixing illegal in a member-owned but incorporated joint venture).

329. *United States v. Topco Assocs., Inc.*, 405 U.S. 596, 612 (1972) (finding territorial restraints in a cooperative-buying association illegal).

330. *Sealy*, 388 U.S. at 352.

331. *See United States v. Topco Assocs., Inc.*, 319 F. Supp. 1031, 1033-34 (N.D. Ill. 1970), *rev'd on other grounds*, 405 U.S. 596.

332. *United States v. Nat'l Ass'n of Real Estate Bds.*, 339 U.S. 485, 495 (1950); *see id.* at 487 n.1 (noting that the Washington Real Estate Board was incorporated).

Realty Multi-List, a Georgia corporation organized and owned by individual real-estate brokers.³³³ Under the corporation's arrangement, one shareholder member could show properties listed by a different shareholder member.³³⁴ The Fifth Circuit concluded that both the agreements among the members fixing commission rates and setting exclusionary and disciplinary rules for brokers who deviated from these rates were unlawful under section 1 of the Sherman Act.³³⁵

In the 2000s, the government and private plaintiffs sued several multiple-listing services, challenging their decisions to exclude real-estate sellers.³³⁶ The Fourth Circuit eventually applied *American Needle*, rejecting the contention that concerted action was lacking because the parties making the decision were acting as "agents of a single corporation."³³⁷ Several other decisions have arrived at similar results reaching both price fixing and concerted exclusion.³³⁸

Hospital-staff-privileges boards also provide an analogy. Hospitals regularly use such boards to decide which physicians can be authorized to practice at the hospital. If physician-board members with independent practices deny staff privileges to someone, they may be treated as a conspiracy rather than a single actor.³³⁹

333. *United States v. Realty Multi-List, Inc.*, 629 F.2d 1351, 1355 (5th Cir. 1980). Under the defendant's bylaws each member had to purchase at least one share of stock in the corporation. *Id.* at 1358.

334. *Id.* at 1355-56.

335. *Id.* at 1388-89.

336. See, e.g., *United States v. Consol. Multiple Listing Serv., Inc.*, No. 3:08-CV-01786-SB, 2009 WL 3150388, at *1 (D.S.C. Aug. 27, 2009).

337. *Robertson v. Sea Pines Real Estate Cos.*, 679 F.3d 278, 285 (4th Cir. 2012).

338. See, e.g., *Freeman v. San Diego Ass'n of Realtors*, 322 F.3d 1133, 1144-47 (9th Cir. 2003) (holding that the agreement of a group of real-estate agents to require a fixed, uniform fee for services constituted price fixing); *Thompson v. Metropolitan Multi-List, Inc.*, 934 F.2d 1566, 1579-82 (11th Cir. 1991) (finding that a real-estate board's subsidiary's restrictive membership policies constituted an illegal group boycott if the subsidiary had sufficient market power); *Park v. El Paso Bd. of Realtors*, 764 F.2d 1053, 1062-63 (5th Cir. 1985) (holding that a reasonable jury could conclude that realty companies were participants in a boycott conspiracy on the basis of evidence that they kept certain listings at the back of their listings books and would show them "only as a last resort"); *Klickads, Inc. v. Real Estate Bd. of N.Y., Inc.*, 2007 WL 2254721 (S.D.N.Y. Aug. 6, 2007) (finding that exclusionary conduct of brokers acting through a real-estate board may constitute concerted action); cf. *McLain v. Real Estate Bd. of New Orleans, Inc.*, 444 U.S. 232, 241-47 (1980) (assuming the validity of a price-fixing issue in a Commerce Clause challenge); *Logue v. West Penn Multi-List, Inc.*, No. 10-cv-0451, 2010 WL 2720787, at *2 (W.D. Pa. July 8, 2010) (denying a motion to dismiss and not challenging the premise of concerted action). On the status of state-law corporations controlled by active participants as cartels, see Herbert Hovenkamp & Christopher R. Leslie, *The Firm as Cartel Manager*, 64 VAND. L. REV. 813, 824-25 (2011).

339. See, e.g., *Boczar v. Manatee Hosps. & Health Sys., Inc.*, 993 F.2d 1514, 1517 (11th Cir. 1993) (finding conspiratorial capacity between the hospital and its individual admitting

Even an incorporated natural monopoly can be subject to section 1 of the Sherman Act if it is controlled by its shareholders for their separate business interests. That issue arose in the 1912 *Terminal Railroad* decision.³⁴⁰ The railroad-bridge infrastructure across the Mississippi was very likely a natural monopoly, given it operated as a bottleneck through which all traffic across the river had to pass.³⁴¹ However, the facility was incorporated, and its shareholders were a group of thirty-eight firms and natural persons organized by railroad financier Jay Gould.³⁴² The venture constituted a single corporation under Missouri law, but it was actively managed by its shareholder participants, all of whom had separate businesses. They were mainly individual railroads, a ferry company, bridges, a “system of terminals,” and several individuals.³⁴³ The venture thus controlled an extensive collection of railroad transportation, transfer, and storage facilities at a point at which all east-west traffic in that part of the country had to cross the Mississippi River.³⁴⁴

physicians); *Bolt v. Halifax Med. Ctr.*, 891 F.2d 810, 827 (11th Cir. 1990), *overruled in part by* *Columbia v. Omni Outdoor Advert., Inc.*, 499 U.S. 365 (1991), *as recognized in* *Williamson Oil Co. v. Philip Morris USA*, 346 F.3d 1287, 1319 (11th Cir. 2003); *Vakharia v. Swedish Covenant Hosp.*, 824 F. Supp. 769, 779 (N.D. Ill. 1993) (finding that a hospital and physicians with separate practices could conspire). Some courts have qualified this, however, by concluding that while the admitting physicians had conspiratorial capacity because of their separate business interests, the hospital itself could not be counted as a conspirator if the resulting decision was contrary to the hospital’s interests. *See Weiss v. York Hosp.*, 745 F.2d 786, 828 (3d Cir. 1984). For a good overview of the issues, see Peter J. Hammer & William M. Sage, *Antitrust, Health Care Quality, and the Courts*, 102 COLUM. L. REV. 545 (2002).

340. *United States v. Terminal R.R. Ass’n*, 224 U.S. 383 (1912). For a fuller statement of the facts, see the district court’s opinion, 148 F. 486, 486–88 (E.D. Mo. 1906).

341. As the Court stated the facts,

Though twenty-four lines of railway converge at St. Louis, not one of them passes through. About one-half of these lines have their termini on the Illinois side of the river. The others, coming from the west and north, have their termini either in the city or on its northern edge. To the river the city owes its origin, and for a century and more its river commerce was predominant. It is now the great obstacle to connection between the termini of lines on opposite sides of the river and any entry into the city by eastern lines. The cost of construction and maintenance of railroad bridges over so great a river makes it impracticable for every road desiring to enter or pass through the city to have its own bridge. The obvious solution is the maintenance of toll bridges open to the use of any and all lines, upon identical terms.

Terminal R.R., 224 U.S. at 395.

342. *Id.* at 391. On Jay Gould’s role in financing railroad associations, see EDWARD J. RENEHAN, JR., *DARK GENIUS OF WALL STREET: THE MISUNDERSTOOD LIFE OF JAY GOULD, KING OF THE ROBBER BARONS* 215–27 (2006).

343. *Terminal R.R.*, 224 U.S. at 390–92; *id.* at 390 n.1 (listing the defendants as separate entities).

344. *Id.* at 392.

The Court's order is both interesting and pertinent to platforms. It rejected the government's request for dissolution. It noted that dissolving the corporation would do nothing to eliminate the bottleneck.³⁴⁵ Rather, it ordered the district court to fashion a "plan of reorganization" that permitted all shippers, whether or not they were members of the organization, to have access on fair and reasonable terms, with the goal of "plac[ing] every such company upon as nearly an equal plane as may be with respect to expenses and charges as that occupied by the proprietary companies."³⁴⁶ Dissolution would be mandated only if the parties failed to agree on these terms.³⁴⁷

The *Terminal Railroad* decree suggests a way to remedy anticompetitive behavior by large digital platforms representing several sellers without sacrificing operational efficiencies. Rather than requiring divestiture of productive assets, which almost always leads to higher prices, we could restructure ownership and management. A large firm such as Amazon can attain economies of scale and scope that rivals cannot match. Further, Amazon benefits consumers, most suppliers, and labor, by selling its own house brands and the brands of third-party merchants on the same website. This is how a seller of house brands can break down the power of large name-brand sellers.³⁴⁸

The problem is not that Amazon sells too much, but rather that Amazon's ownership and management make it profitable for Amazon to discriminate in favor of its own products and against those of third-party sellers, or to enter other anticompetitive agreements with independent sellers. Breaking up Amazon or forcing a physical separation of own-product and third-party sales would mean giving up a great deal of brand rivalry that benefits consumers.

Suppose a court required Amazon to turn important commercial decisions over to a board of active Amazon participants who made their own sales on the platform, purchased from Amazon, or dealt with it for ancillary services. Acting collaboratively, they could control product selection, distribution and customer agreements, advertising, internal product development, and pricing of Amazon's own products. Their decisions would be subject to antitrust scrutiny under section 1 of the Sherman Act.

Such an approach could be particularly useful in situations involving refusals to deal. To illustrate, an important focus of the EU's November 2020 Statement

345. *Id.* at 409-10.

346. *Id.* at 411.

347. *Id.* Justice Douglas's concurring opinion in *Associated Press v. United States* compared the remedy there—to enjoin Associated Press's restrictive membership agreements—with the *Terminal Railroad* remedy to provide "for equality of treatment of all railroads." 326 U.S. 1, 25 (1945) (Douglas, J., concurring); see *supra* notes 315-317 and accompanying text.

348. See *supra* notes 277-280 and accompanying text.

of Objections Against Amazon is on claims that Amazon “artificially favour[s] its own retail offers” in product areas where it sells both its own and third-party merchandise.³⁴⁹ Under current United States antitrust law, a firm acting unilaterally would not be prevented from discriminating between its own and third-party sales. That was the very issue in *Trinko* – namely, that monopolist Verizon discriminated against third-party carriers and favored its own.³⁵⁰

If decision making in this area were entrusted to a board of active sellers, including both Amazon itself and third parties, the section 1 standard would reach the conduct. Justice Scalia’s *Trinko* opinion, citing *Terminal Railroad*, observed that the Supreme Court had imposed nondiscrimination obligations under similar circumstances, but only when the government was attacking concerted rather than unilateral conduct.³⁵¹ Further, when such conduct is concerted, it is “amenable to a remedy that does not require judicial estimation of free-market forces: simply requiring that the outsider be granted nondiscriminatory admission to the club.”³⁵²

The number and diversity of participants could vary, but they should be sufficiently numerous and diverse to make anticompetitive collusion unlikely. That could include individual merchants who sell on Amazon, principal shareholders, and perhaps customers and others. The Board should be subject to rules setting objective standards for product selection.

Numerosity should not interfere with effective operation. The Chicago Board of Trade had 1800 trading members and decisionmakers in 1918, when organizational rules and procedures were still being managed with pencil and paper.³⁵³ The NCAA has more than 1200 member schools,³⁵⁴ and the Associated Press had more than 1200 member newspapers in 1945.³⁵⁵ The Terminal Railroad Association had 38 shareholder members, but the decree contemplated

349. See Press Release, European Commission, Antitrust: Commission Sends Statement of Objections to Amazon for the Use of Non-Public Independent Seller Data and Opens Second Investigation into its E-commerce Business Practices (Nov. 10, 2020) (on file with author). On the basic issue of platform separation, see *supra* notes 277–280 and accompanying text.

350. *Verizon Commc’ns, Inc. v. Law Offices of Curtis V. Trinko, LLP*, 540 U.S. 398, 404 (2004) (discussing the allegation that Verizon filled orders “on a discriminatory basis” as part of a scheme to discourage customers from using competing carriers).

351. See *id.* at 410 n.3 (“Respondent also relies upon *United States v. Terminal Railroad Assn. of St. Louis* and *Associated Press v. United States*. These cases involved *concerted* action, which presents greater anticompetitive concerns . . .” (citations omitted)).

352. *Id.*

353. See *Bd. of Trade v. Christie Grain & Stock Co.*, 198 U.S. 236, 246–47 (1905).

354. *Membership*, NCAA, <http://www.ncaa.org/about/who-we-are/membership> [<https://perma.cc/3D8T-JKWG>].

355. *Associated Press v. United States*, 326 U.S. 1, 3–4 (1945).

nondiscriminatory sharing with any non-shareholder who wished to participate.³⁵⁶ One large real-estate board, the Chicago Association of Realtors, has over 15,500 members.³⁵⁷

The designated decisionmakers need not be Amazon shareholders, as long as they have independent business interests and operate on Amazon. In fact, the details of state corporate law or organization would not ordinarily affect the federal antitrust issue. For example, in some of these cases – such as *Terminal Railroad*,³⁵⁸ *Sealy*,³⁵⁹ and *Topco*³⁶⁰ – the relevant decisionmakers owned shares in the corporation. In *American Needle*, the organization in question was NFL Properties, an LLC,³⁶¹ which does not have shareholders but rather owner-members similar to a partnership. Similarly, in *Associated Press*, the Court probed a cooperative association incorporated under the Membership Corporation Laws of New York.³⁶²

Whether the court applies the per se rule or the rule of reason in such cases would depend on the offense. In *NCAA*, the Supreme Court concluded that the rule of reason should apply to all restraints undertaken by the association because cooperation was necessary to the creation of the product: intercollegiate sports.³⁶³ That is not the case with product sales on Amazon. Rather, the traditional distinction between naked and ancillary restraints would work well. Price fixing or unjustified limitations on output would be strongly suspect.³⁶⁴ On the other hand, rules establishing uniform practices governing distribution and resolution of customer complaints could certainly be reasonable and thus lawful. Concerted refusals to deal can cover a range of practices from naked boycotts

356. *United States v. Terminal R.R. Ass'n of St. Louis*, 224 U.S. 383, 390, 411-12 (1912).

357. *About Us*, CHI. ASS'N REALTORS, <https://chicagorealtor.com/about-us> [https://perma.cc/YP4N-R7PS]. The Board also lists twenty-one Directors, each of whom is associated with a particular real-estate brokerage. See *Board of Directors*, CHI. ASS'N REALTORS, <https://chicagorealtor.com/about-us/board-of-directors> [https://perma.cc/FMS9-SUDT].

358. See *Terminal R.R.*, 224 U.S. at 396-400.

359. *United States v. Sealy, Inc.*, 388 U.S. 350, 352-53 (1967).

360. *United States v. Topco Assocs., Inc.*, 405 U.S. 596, 598-600 (1972).

361. See *NFL Properties LLC*, BLOOMBERG, <https://www.bloomberg.com/profile/company/0425424D:US> [https://perma.cc/WJ72-TSUK].

362. *Associated Press v. United States*, 326 U.S. 1, 3-4 (1945).

363. *NCAA v. Bd. of Regents*, 468 U.S. 85, 101 (1984) (explaining that the rule of reason is needed in a case where “horizontal restraints on competition are essential if the product is to be available at all”).

364. See AREEDA & HOVENKAMP, *supra* note 9, ¶¶ 2004-06.

motivated by price (per se unlawful)³⁶⁵ to reasonable standard setting (rule of reason),³⁶⁶ and should be addressed accordingly.

Such an approach would notably *not* aim at size per se. An Amazon with competitively restructured management could be just as large as it is now. Indeed, it could be even larger. Cartels and monopolies function by restricting output, and facilitating internal competition could serve to increase it. Amazon would likely retain the efficiencies that flow from its size and scope. We would have effectively turned the internal workings of its platform into a market. It still might be in a position to undersell other businesses or to exclude products that its members and rules disapprove. If it did so in an anticompetitive manner, however, section 1 of the Sherman Act could be applied.

b. Mandatory Interoperability or Pooling

Restructuring management is not the only way to open a digital platform to more competition. This Section briefly discusses forced interoperability or pooling, which can weaken dominant positions while actually improving performance. “Interoperability” occurs when the technology or systems of multiple firms are linked in a way that permits users to process instructions for all of them simultaneously. “Pooling” means something similar, although with greater emphasis on the sharing of information.³⁶⁷ Both reforms operate by increasing competition within networks rather than breaking networks apart or divesting assets in other ways.

While a breakup frequently increases costs or reduces quality by denying firms economies of scale or scope, interoperability or pooling can make a firm effectively larger, even while situating it in a more competitive environment. It does this mainly by increasing the size of the installed base on one or both sides of a platform. To illustrate, if three incompatible telephone systems with 500, 300, and 200 subscribers made their technologies interoperable and combined their customer information, the resulting system would be worth more than the sum of its parts. Given network effects, the 1000-subscriber system is worth more than the sum of the three systems that are unable to interconnect. Further, none would have a customer base advantage over the other two. They could focus their competition on other areas of service quality, price, or sale of devices.

365. *Id.* ¶ 2203.

366. *Id.* ¶¶ 2230–33.

367. Pooling can also refer to technology sharing, however. For example, patent pooling occurs when multiple parties cross license their patents into a common pool that all participants can access. *See, e.g.,* Josh Lerner & Jean Tirole, *Efficient Patent Pools*, 94 AM. ECON. REV. 691, 691 (2004).

That is, in fact, the phone system that we have, except that our current system involves the joint participation of many more companies than three.

While some sharing remedies might be complex, they need not be.³⁶⁸ They may consist of little more than compelled pooling of data in a common format. Further, interoperability remedies need not require any spinoffs of assets, although sometimes they might accompany divestitures as a way of restoring competition. For example, the FTC's complaint against Facebook requests a spinoff of two firms that Facebook acquired, Instagram and WhatsApp.³⁶⁹ Disentangling two firms that have been partially integrated raises difficult issues. One promising solution would be to give both Facebook and the spun-off firms full and immediate access to all data, subject to users' individual right to block. Postings on one platform could be accessed on the other platforms, and vice versa. Users could affiliate with one or all, just as they do now. A simple spinoff that segregates the two sets of customers and data tends to reduce the scope of externalities, making the platforms as a group less valuable. Sharing would increase it. In fact, Facebook is currently doing a limited version of this. While Instagram has a separate computer identity, for many purposes customers and information are aggregated across the two platforms.³⁷⁰ If a single firm that controls all three platforms can aggregate them, separate owners could do the same thing, except in a more competitive environment.

When it is mutually profitable and the market is functioning properly, sharing of systems or data is often achieved by voluntary agreement. One example of voluntary sharing of both technology and user information is email, where a large number of programs, called clients, receive, display, store, and send messages. Different clients such as Microsoft Outlook and Google's Gmail function together seamlessly. In order to interconnect they need a shared set of technical protocols, as well as information about senders' and recipients' email addresses and servers. Some are monetized through individual user fees while others are free.

368. For a good study of the role of data interoperability in EU competition law, see Jörg Hoffmann & Begoña Glez Otero, *Demystifying the Role of Data Interoperability in the Access and Sharing Debate* (Max Planck Inst. for Innovation & Competition Research Paper No. 20-16, 2020), <https://ssrn.com/abstract=3705217> [<https://perma.cc/L4H4-XAYS>].

369. FTC Facebook Compl., *supra* note 33, at 51.

370. See Jon Porter, *Instagram Is Testing the Ability to Share Your Precise Location History with Facebook*, VERGE (Oct. 5, 2018, 6:48 AM EDT), <https://www.theverge.com/2018/10/5/17940364/instagram-location-sharing-data-sharing-facebook-test> [<https://perma.cc/8ASJ-MA86>]; see also Matthew Wille, *Great, Now Even WhatsApp Requires Data-Sharing with Facebook*, INPUT (Jan. 6, 2021, 12:36 PM), <https://www.inputmag.com/culture/great-now-even-whatsapp-requires-data-sharing-with-facebook> [<https://perma.cc/9PKX-W675>] (discussing WhatsApp's data-sharing with Facebook).

Another example that is technically much different is Insurance Services Office (ISO), which aggregates actuarial data from participating casualty insurers. The result is a larger pool of statistical data about the expected cost of insured losses that enables insurers who share it to calculate premiums more accurately.³⁷¹ Another example is Journal Storage (JSTOR), a digital platform that aggregates the full text of licensed articles from some 2000 academic journals and makes them available to licensees, who can then search all of them simultaneously.³⁷² Finally, a sharing agreement that began voluntarily but was later modified by antitrust consent decrees is blanket licensing of digitized music.³⁷³ Blanket licensing provides licensees with indemnified, immediate, and very broad access to recorded music from thousands of rights holders via organizations such as Broadcast Music, Inc. and ASCAP.³⁷⁴ This system eventually led to music-sharing sites such as Spotify or Apple Music, which are large blanket licensees that in turn sublicense to users. The users can search through the entire database by subject, artist, or other categories, and the search results are aggregated accordingly.

As these illustrations indicate, interoperability or pooling can take many forms, depending on the industry's technology, the kind of sharing that will improve the participants' performance, and individual providers' systems for monetizing their services. Sharing can increase the aggregate value of assets by enlarging the range of both direct and indirect positive network effects. As a result, in a well-functioning market, competitive firms can be expected to achieve sharing voluntarily. Most of the above examples provide evidence of this.

By contrast, dominant firms often have an incentive not to share in order to protect their position.³⁷⁵ That was AT&T's position when it was the dominant carrier, relentlessly pursuing a policy of excluding "foreign attachments" from

371. The Supreme Court described Insurance Services Office (ISO) and its processes in an anti-trust case. *Hartford Fire Ins. Co. v. California*, 509 U.S. 764, 772-73 (1993); see also *Insurance Services Office (ISO)*, VERISK, <https://www.verisk.com/insurance/brands/iso> [<https://perma.cc/794Z-442N>] (describing ISO).

372. See *About JSTOR*, JSTOR, <https://about.jstor.org> [<https://perma.cc/VB9H-8W86>].

373. Blanket licensing of digitized music involves consent decrees that made the licenses nonexclusive and compelled distribution on nondiscriminatory terms. See Michael A. Einhorn, *Intellectual Property and Antitrust: Music Performing Rights in Broadcasting*, 24 COLUM. VLA J.L. & ARTS 349, 350-51 (2001).

374. See *Broadcast Music, Inc. v. Columbia Broad. Sys., Inc.*, 441 U.S. 1, 5-6 (1979).

375. See Michael L. Katz & Carl Shapiro, *Network Externalities, Competition, and Compatibility*, 75 AM. ECON. REV. 424, 425 (1985) ("[F]irms with good reputations or large existing networks will tend to be against compatibility, even when welfare is increased by the move to compatibility. In contrast, firms with small networks or weak reputations will tend to favor product compatibility.").

its network.³⁷⁶ Fiona Scott Morton and David Dinielli note that Facebook invited a significant amount of interoperability before it became dominant but stopped doing so later.³⁷⁷ The ability to break down dominant positions makes forced interoperability a promising remedy against dominant firms that have engaged in unlawful exclusionary practices.

Interoperability and pooling are different from multi-homing. With multi-homing and low switching costs a user can switch from one platform to another easily and cheaply, such as switching among ride-hailing services or internet-search engines.³⁷⁸ While switching is easy, the user still accesses one service at a time. For example, without interoperability, a person could have both Gmail and Outlook apps on her computer, but she would need to use Gmail to communicate with other Gmail users, and Outlook for other Outlook users. Uber and Lyft, the two largest ride-hailing apps, have multi-homing but not interoperability. You can have both apps on your smartphone but must search each separately.

Interoperability and pooling also differ from data portability, encouraged by the EU's General Data Protection Regulation (GDPR), which not only protects data but also gives consumers a right to their data in a portable, or shareable format.³⁷⁹ The principal purpose of the GDPR is to protect consumer privacy, although it also is intended to make it easier to for consumers to transfer their data among service platforms.

For technologies such as search engines that depend on large amounts of user data, pooling as an antitrust remedy would place the data into a common database equally accessible by all participating search firms, subject to user rights to withhold. That would improve search results for everyone, and thus improve consumer welfare. Search engines could continue to compete in search algorithms, in price competition for advertising or search placement, privacy guarantees, or other features.

One successful example of interoperability achieved by an antitrust decree is the U.S. phone system. Prior to the advent of wireless technology, the system was widely regarded as a natural monopoly, distinct from over-the-air

376. *E.g.*, *Phonetele, Inc. v. Am. Tel. & Tel. Co.*, 664 F.2d 716 (9th Cir. 1981) (finding a lack of antitrust regulatory immunity for AT&T's policy prohibiting firms from connecting their equipment to its network).

377. See Scott Morton & Dinielli, *Roadmap for an Antitrust Case Against Facebook*, *supra* note 220, at 2, 17.

378. See discussion *supra* Section I.C.1.

379. See Paul de Hert et al., *The Right to Data Portability in the GDPR: Toward User-Centric Interoperability of Digital Services*, 34 *COMPUT. L. & SEC. REV.* 193, 193-96 (2018). On ways that the GDPR could be used by competition-law authorities to implement greater interoperability, see Oscar Borgogno & Giuseppe Colangelo, *Data Sharing and Interoperability: Fostering Innovation and Competition Through APIs*, 35 *COMPUT. L. & SEC. REV.* 1, 11-15 (2019).

broadcasting, which was not.³⁸⁰ Indeed, the phone system was operated as a unitary regulated monopoly for many decades before an antitrust consent order that imposed both a structural breakup and interoperability requirements.³⁸¹ Eventually that system was replaced by the 1996 Telecommunications Act, which broadly compelled interconnection and enforced it through compelled private agreement or arbitration supervised by the FCC and state agencies.³⁸²

Although the U.S. telephone system is now owned and operated by hundreds of firms, it still remains a unitary network. It enjoys all of the network externalities that result from having a single, very large network. One can own a Samsung phone on Verizon Wireless in Oregon and call someone who owns a Vtech phone on a Frontier landline in North Carolina.³⁸³ Cellular phone carriers who operate in the same geographic territory compete on data speed, range, device choice and terms, and prices, but they do not compete on the size or composition of network participants. This is because everyone on the network is able to talk to everyone else, no matter who the carrier is.

The Stigler Center's 2019 Final Report on Digital Platforms briefly discusses forced interoperability as a solution to firm-dominance problems in networked markets.³⁸⁴ The Report cites social-networking platforms, particularly Facebook, as candidates for interoperability.³⁸⁵ If firms such as Facebook or Google,

380. See, e.g., *GTE Serv. Corp. v. FCC*, 474 F.2d 724, 735 (2d Cir. 1973) (noting that the FCC concluded that the telephone system is a natural monopoly); *Gen. Tel. Co. v. United States*, 449 F.2d 846, 856, 859 (5th Cir. 1971) (acknowledging the telephone company's argument that it was a natural monopoly, as well the government's position that over-the-air broadcasting was not a natural monopoly); *Nat'l Assn. of Theatre Owners v. FCC*, 420 F.2d 194, 203 (D.C. Cir. 1969) (holding that telephone systems are a natural monopoly but that commercial broadcasting is not); see also Stephen R. Barnett, *Cable Television and Media Concentration*, 22 STAN. L. REV. 221, 240 (1970) (making the same distinction—except concluding that cable television, unlike over-the-air broadcasting, is probably a natural monopoly).

381. See *United States v. Am. Tel. & Tel. Co.*, 552 F. Supp. 131, 226-27 (D.D.C. 1982).

382. E.g., Telecommunications Act of 1996, 47 U.S.C. § 251(c) (2018); see also *Verizon Commc'ns, Inc. v. Law Offices of Curtis Trinko, LLP*, 540 U.S. 398, 402 (2004) (discussing the incumbent carriers' obligations under the Telecommunications Act of 1996 to share telephone networks with competitors).

383. This regulatory regime is described in *Verizon Communications Inc. v. Law Offices of Curtis Trinko, LLP*, 540 U.S. 398, 405-06 (2004).

384. See STIGLER COMM. ON DIGITAL PLATFORMS, FINAL REPORT, CHICAGO BOOTH: STIGLER CTR. FOR THE STUDY OF THE ECON. & THE STATE 16 (2019), <https://research.chicagobooth.edu/-/media/research/stigler/pdfs/digital-platforms---committee-report---stigler-center.pdf> [<https://perma.cc/C96V-75KF>].

385. See *id.*; see also Order Denying (1) Motion to Dismiss and (2) Granting in Part and Denying in Part Motion for More Definitive Statement at 2, 4-9, *Facebook, Inc. v. Power Ventures, Inc.*, No. 5:08-cv-05780-LHK, 2009 WL 1299698 (N.D. Cal. May 11, 2009) (denying the motion to dismiss Facebook's claim against Power Ventures for collecting user information from Facebook's website in violation of federal law). The Ninth Circuit eventually found that Power

which depend on large quantities of user data, were forced to place it into a common pool, then any positive externalities that the data generated would be enlarged rather than diminished. Privacy could still be protected, and users would still have an opportunity to opt out of data collection or sharing. Individual firms could still compete along many other avenues, but not on the size of their consumer-information base.

One problem that must be accounted for is free riding. Laggard services with small investments could still have their messages posted on the market leaders. The very fact that commons exist and prosper shows that these problems are not insurmountable, but they do require effective governance rules.³⁸⁶

Free riding is less likely to be a problem in a market that monetizes each individual transaction. For example, suppose ride-hailing services Uber and Lyft became interoperable through a single “UberLyft” App that revealed the availability and prices for cars from both services on one side of the platform, and the pool of potential riders on the other side. Under interoperability, the user would select a particular car, and the transaction would occur at that point. Interoperability very similar to this already occurs in merchant-terminal and online-payment systems. For example, a single hardware terminal at the checkout counter or a single app on a smartphone can take credit and debit cards from a variety of issuers. However, the transaction is monetized only after the customer selects a particular card.³⁸⁷

Network effects can be a formidable barrier to entry, but interoperability can facilitate the entry and survival of small firms. To take a simple illustration, a ride-hailing platform must be large enough to supply ample drivers and passengers to make a functioning system. Under interoperability, however, all passengers and drivers would be aggregated, as in the telephone system. Theoretically a single individual with a single automobile could participate in that system, getting her share of rides. In the insurance-risk data-sharing example of ISO, mentioned above, even a small insurer can obtain access to high-quality risk data to

Ventures had trespassed on Facebook computers in violation of the Computer Fraud and Abuse Act. *See* Facebook, Inc. v. Power Ventures, Inc., 844 F.3d 1058, 1065-66 (9th Cir. 2016).

386. *See* OSTRUM, *supra* note 305, at 58-61. For one version of these proposed rules, see Michael Kades & Fiona Scott Morton, *Interoperability as a Competition Remedy for Digital Networks* 7-27 (Wash. Ctr. for Equitable Growth, Working Paper), <https://equitablegrowth.org/working-papers/interoperability-as-a-competition-remedy-for-digital-networks> [<https://perma.cc/MXR3-4KN7>].

387. *See also* Filip Caron, *The Evolving Payments Landscape: Technological Innovation in Payment Systems*, 20 IT PROF. 53 (2018) (providing an overview of technological innovations and new challenges in the payments market). For a description of regulatory obstacles, see Yesha Yadav, *Fintech and International Financial Regulation*, 53 VAND. J. TRANSNAT'L L. 1109, 1135-42 (2020).

the extent it is shared among all participating insurers.³⁸⁸ Individual self-recording artists can license their performances to ASCAP and be included in the blanket license.³⁸⁹ In sum, effective interoperability can significantly reduce the exclusionary effects of scale economies or positive network effects and can greatly increase the number of competing participants.

Interoperability concerns are also relevant to some vertical-exclusion arrangements, particularly in media markets. The principal problems involve intellectual-property rights. Consider, for example, commercial video content such as movies and television. The marginal cost of licensing access to a digitized movie is very low. Further, digital video content is nonrivalrous, which means that it can be licensed out an indefinite number of times with no depletion of what is left over. That creates a fairly robust strategy for a firm that owns video content and nothing else: license to every customer willing to pay more than the cost of licensing. In that case, access to a popular film does not depend on subscription to a particular cable company or satellite service.

The principal threat to widespread dissemination here is vertical exclusivity, which can result from either exclusive dealing agreements or vertical mergers. For example, suppose the video-content owner is acquired by (or acquires) a video-distribution firm such as a satellite-television company. Now video content can become a lever that the satellite company, such as DirecTV, uses to attract customers to its network. The company may have an incentive to deny access to those who watch the video on a different distributor or else charge higher prices, inducing some of those customers to switch.³⁹⁰ Here, the best solution is an injunction against the anticompetitive exclusive deal or merger.

388. See, e.g., *Amica Mut. Ins. Co. v. Farhar*, No. 05-cv-00162-REB-MJW, 2006 WL 8454578, at *3 (D. Colo. Feb. 17, 2006) (noting that some small insurers depended on ISO for risk data); Daniel Schwarcz, *Ending Public Utility Style Rate Regulation in Insurance*, 35 YALE J. REG. 941, 968–72 (2018).

389. See *ASCAP Payment System: Registering Your Music with ASCAP*, ASCAP, [https://www.ascap.com/help/royalties-and-payment/payment/registering_\[https://perma.cc/4UJ4-L34P\]](https://www.ascap.com/help/royalties-and-payment/payment/registering_[https://perma.cc/4UJ4-L34P]).

390. The government alleged as much in its unsuccessful challenge to the AT&T-Time Warner merger. See *United States v. Am. Tel. & Tel. Co.*, 290 F. Supp. 3d 1, 2–3, 5 (D.D.C. 2018), *aff'd*, 916 F.3d 1029 (D.C. Cir. 2019). The antitrust-enforcement agencies recently issued new vertical-merger guidelines, which addressed this incentive problem. See U.S. DOJ & FTC, *VERTICAL MERGER GUIDELINES* (June 30, 2020), https://www.ftc.gov/system/files/documents/reports/us-department-justice-federal-trade-commission-vertical-merger-guidelines/vertical_merger_guidelines_6-30-20.pdf [https://perma.cc/Y5BS-M4NN]; see also AREEDA & HOVENKAMP, *supra* note 9, ¶ 1000(d) (discussing the etymology and significant features of the 2020 Vertical Merger Guidelines). See generally Herbert Hovenkamp, *Competitive Harm from Vertical Mergers*, REV. INDUS. ORG. (forthcoming 2021), <https://ssrn.com/abstract=3683386> [https://perma.cc/P8RR-TTAA] (examining the Vertical Merger Guidelines against section 7 of the Clayton Act's requirements).

3. *Conclusion: Compelling Network Competition Without Sacrificing Structural Efficiency*

One reason divestiture has performed so poorly as an antitrust remedy is that it has been overly focused on the dismantling of assets whose effects on scale or scope are often harmful. We should be paying more attention to remedies that permit firms to perform better rather than worse, but in more competitive environments. One possibility is to transfer firms' internal decision making to groups of participants that can be subjected to antitrust control under section 1 of the Sherman Act. As markets become more competitive, their aggregate output increases. Another possibility is to administer interconnection rules that serve to increase rather than diminish the positive network effects that are ubiquitous in digital platforms. The first of these might work best in a platform such as Amazon, in which competitive sales of traditional physical products are made on the same platform. The second is more appropriate for platforms such as Google or Facebook, which involve large databases of digitized information.

Can antitrust courts bring about these remedies, or would we need statutory regulation? One possible disadvantage of using antitrust is that it can be applied judicially only to firms over which it has jurisdiction. Legislation, in contrast, can apply generally. This difference need not be important, however, when sharing is to everyone's advantage. For example, if Google or Facebook should be ordered to share customer information, that obligation should run only to competitors who agree to share in return. And making Amazon's internal commercial structure more competitive would not likely place it at a disadvantage against competitors.

III. PLATFORM ACQUISITIONS

A. *Acquisitions of Nascent Firms Generally*

Given that most digital platforms are not natural monopolies, they can maintain dominant positions only by engaging in strategic behavior. One of the biggest threats to the major digital platforms is from small firms that resemble the dominant platforms themselves in their earlier years. The history shows dominant platforms rolled over by new firms with new approaches, such as Alta Vista by Google Search, or MySpace by Facebook. It also shows that new firms with new technologies, such as Google, can become formidable competitors against established rivals such as Microsoft and Apple.

All of the major platforms started out in someone's garage. They were all tiny companies with smart and resourceful owners, a good idea, intellectual-property rights, and significant but undeveloped growth potential. And yet, an all-too-

common phenomenon today is that one of the dominant platforms acquires a young startup before it has a chance to emerge as a viable competitor.³⁹¹ Indeed, many startup entrepreneurs today are not motivated nearly as much by the prospect of developing a new business as by the opportunity to sell out to a major platform at a high price, even if their business will be shut down as a result.³⁹² Capital markets reflect this phenomenon. It is easier to get capital for a new firm that is highly likely to be acquired than for a firm with a technology that is promising on its own terms.³⁹³

This situation has produced an unhealthy equilibrium. New entry is important in any market, particularly one in which technology moves fast. Something must be done to make it more likely that startups will develop into viable independent competitors rather than disappear into one of the large digital platforms. One possibility is the antitrust merger laws. However, given that the acquired firms are often very small and do not sell competing products, this may require new legislation.

The operative word is “may” because the need is not obvious from the statutory language. Section 7 of the Clayton Act is very broad, reaching all acquisitions whose effect “may be substantially to lessen competition.”³⁹⁴ Its coverage is not limited to firms of any particular size or market share, or to those with any particular kind of competitive relationship. It reaches horizontal, vertical, and conglomerate acquisitions. Nor does the statute itself restrict the mechanisms by which competition might be lessened. Finally, the courts have repeatedly observed that section 7 has a “prophylactic” purpose,³⁹⁵ which is to police acquisitions when their competitive threats are still in their “incipiency.” However, years

391. Cf. STAFF OF H. SUBCOMM. ON ANTITRUST, COMMERCIAL AND ADMINISTRATIVE LAW OF THE COMM. ON THE JUDICIARY, 116TH CONG., INVESTIGATION OF COMPETITION IN DIGITAL MARKETS 23 (Comm. Rep. 2020) (canvassing Amazon’s major acquisitions); *id.* at 25, 150 (noting Facebook’s acquisitions of at least 63 companies since 2004); *id.* at 175 (“In a span of 20 years, Google purchased well over 260 companies—a figure that likely understates the full breadth of Google’s acquisitions, given that many of the firm’s purchases have gone unreported.”).

392. See Mark A. Lemley & Andrew McCreary, *Exit Strategy*, 101 B.U. L. REV. 1, 7-8, 55-57, 101 (2021).

393. See, e.g., *id.* at 24-55 (documenting venture capital markets’ heavy orientation toward new entrants’ selloff possibilities); Armin Schwienbacher, *Innovation and Venture Capital Exits*, 118 ECON. J. 1888, 1890-91 (2008).

394. 15 U.S.C. § 18 (2018).

395. See, e.g., *Brunswick Corp. v. Pueblo Bowl-O-Mat, Inc.* 429 U.S. 477, 485 (1977); *United States v. E.I. du Pont de Nemours & Co.*, 353 U.S. 586, 589, 597 (1957); see also Herbert Hovenkamp, *Prophylactic Merger Policy*, 70 HASTINGS L.J. 45, 51-55 (2018) (discussing applications of the incipency test).

of restrictive interpretation have added a judicial gloss that reads the statute much more narrowly.³⁹⁶

Most of the harms of dominant-platform acquisitions of nascent firms are not easily addressed by current merger policy. Agency merger enforcement under the Merger Guidelines is directed almost exclusively to the threat of higher prices or reduced innovation in the relatively short run.³⁹⁷ Some platform acquisitions do raise these concerns, warranting challenge on more traditional grounds. One possibility that was eventually approved was Amazon's acquisition of Whole Foods, with its chain of just under 500 physical stores.³⁹⁸ If that acquisition had been challenged, it would very likely have been on conventional, price-increasing theories of merger harm. It seems less likely that a well-established organic grocer such as Whole Foods would have merged into a full-fledged internet merchandiser in competition with Amazon.

The threat raised by systematic platform acquisitions of tech startups is more akin to an exclusionary practice. Most of these acquisitions are not reasonably calculated to produce price increases or innovation reductions in the short run by facilitating collusion in the postmerger market. Their purpose, instead, is to prevent the eventual emergence of substantial rivals. There is legal authority for treating mergers as exclusionary practices, but little recent enforcement history.³⁹⁹ Interestingly, the FTC's 2020 antitrust complaint against Facebook seeks the undoing of acquisitions of Instagram and WhatsApp entirely under section 2 of the Sherman Act, which is directed toward exclusionary practices. There are no claims under section 7.⁴⁰⁰ By contrast, the parallel complaint filed by the states' attorneys general seeks divestiture of the same firms, although under section 7.⁴⁰¹

Most of the threats from nascent firms are not from head-to-head competitors. Given the significant scale and network economies that the large platforms

396. See, e.g., *United States v. Baker Hughes, Inc.*, 908 F.2d 981 (D.C. Cir. 1990) (refusing to condemn a merger in a concentrated market); *New York v. Deutsche Telekom AG*, 439 F. Supp. 3d 179 (S.D.N.Y. 2020) (same).

397. U.S. DEP'T OF JUST. & FED. TRADE COMM'N, HORIZONTAL MERGER GUIDELINES, *supra* note 104, § 2.

398. Brent Kendall & Heather Haddon, *FTC Approves Whole Foods-Amazon Merger*, WALL ST. J. (Aug. 23, 2017, 6:26 PM ET), <https://www.wsj.com/articles/whole-foods-shareholders-approve-merger-with-amazon-1503498623> [<https://perma.cc/R2JL-3S74>].

399. See AREEDA & HOVENKAMP, *supra* note 9, ¶ 701.

400. See FTC Facebook Compl., *supra* note 33, ¶¶ 169-74. Historically, Sherman Act challenges to mergers occurred mainly under section 1, as "combinations" in restraint of trade. E.g., *United States v. Columbia Steel Co.*, 334 U.S. 495 (1948) (presenting a Sherman Act section 1 challenge to an asset acquisition).

401. See Complaint ¶ 277, *New York v. Facebook, Inc.*, No. 1:20-cv-03589-JEB (D.D.C. Dec. 9, 2020) (seeking divestiture under section 7).

enjoy, a startup that simply offers an identical product is unlikely to be a significant threat. The more plausible threat is from a startup that offers a differentiated version, a complement, or some novel innovation that has distinctive appeal. As a result, many of these acquisitions are only partially horizontal or not horizontal at all.⁴⁰² Merger law today is heavily focused on horizontal mergers, which get its closest scrutiny. Vertical mergers, between buyers and sellers, are challenged far less frequently.⁴⁰³ So-called “conglomerate” mergers between firms whose relationship is neither horizontal nor vertical are rarely challenged, but this is where the startup-acquisition threat is most pronounced.

Small tech firms with good ideas and management can grow very quickly. Nevertheless, antitrust enforcement against these acquisitions raises formidable obstacles. First, *individual* threats to competition can be difficult to prove. While a nascent digital firm with a promising technology might turn into a platform juggernaut, at the time of these acquisitions few show more than speculative promise. In fact, many of them have zero, or at least very small, market shares. Predicting at the time of a contemplated transaction which ones will yield such a threat could be impossible.

Uncertainty about causation need not frustrate government enforcement, which can focus on the management of risks. Private actions require more specific causation. The statutes authorize the United States and the FTC as enforcers to “prevent” antitrust violations, with no causation requirement.⁴⁰⁴ By contrast, antitrust’s private-action provisions require provable injury “by reason of” an antitrust violation for damages actions,⁴⁰⁵ or “threatened loss or damage by a violation of the antitrust laws” to support an injunction.⁴⁰⁶

402. The FTC’s Facebook complaint notes that the competitive threat comes from differentiated rivals. FTC Facebook Compl., *supra* note 33, ¶¶ 7–8 (“[T]he sharpest competitive threats to Facebook Blue come not from ‘Facebook clones,’ but from differentiated services and during periods of transition.”).

403. The government’s challenge of the AT&T-Time Warner merger is a recent exception and generated great attention for challenging a vertical merger. See, e.g., Alissa H. Gardenswartz & Allen P. Grunes, *Vertical Mergers Receive Increased Attention from Federal and State Antitrust Authorities*, LEXOLOGY (Mar. 16, 2020), <https://www.lexology.com/library/detail.aspx?g=2fe17eb3-8ebf-4df3-8a6e-a14349ae3098> [<https://perma.cc/FX8E-JS22>] (“The AT&T/Time Warner case was the first vertical merger case litigated by one of the federal agencies in almost 40 years.”).

404. 15 U.S.C. § 25 (2018) (authorizing the United States to “prevent and restrain” antitrust violations without stipulating a causation requirement); *id.* § 45(a)(2) (2018) (authorizing the FTC “to prevent” firms “from using unfair methods of competition,” once again, with no causation requirement). See Herbert Hovenkamp, *Antitrust Harm and Causation* (Univ. of Pa., Inst. for Law & Econ. Research, Paper No. 21-10, Feb. 2021), https://papers.ssrn.com/abstract_id=3771399 [<https://perma.cc/XMY4-N9MJ>].

405. 15 U.S.C. § 15 (2018).

406. *Id.* § 26.

This distinction between public and private causation requirements is hardly novel to antitrust. The legal system generally has rather specific causation requirements for private enforcement, while it permits the government to pursue violations as an enforcer in order to limit unreasonable risk. A violation requires the risk but not necessarily realization. For example, state traffic laws penalize drunk driving even though the driver has not yet hurt any person or property. By contrast, the private tort plaintiff can sue only for damage done or obtain an injunction only against specifically threatened harm.

New entry ordinarily undermines monopoly. Consumers benefit because the combined output of the dominant firm plus the new entrant will be larger than that of the dominant firm alone prior to the new entrant's appearance. In fact, once the new entrant becomes a competitive force it will gradually push output up and prices down. Systematic platform acquisitions undermine this process.⁴⁰⁷

Two firms in a bargaining relationship will move toward their joint-maximizing position.⁴⁰⁸ An acquisition offers the dominant firm the value of integration and improvement of its own product offerings, but also of exclusion because after an acquisition the small firm can neither be acquired by someone else nor grow into a formidable competitor. As a result, the dominant firm's willingness to pay is driven by both the production value of the acquired assets and their exclusion value. These two values can be quite independent of one another. Indeed, often the acquired firm is valuable to the acquirer even if does not intend to use the acquired assets at all.⁴⁰⁹

Considered by itself, the integration value is typically a social good. Further, if the firms are not competitors no competition between them is being eliminated. The exclusion value is another story. The threats to the larger firm are, first, that someone else might acquire the young firm, and second, that the young firm would expand into a formidable rival.

The task for policy makers is to find ways to manage acquisitions so as to permit socially positive integration values while minimizing the harm caused by exclusion. The typical acquisition is of a relatively young tech firm whose principal assets are intellectual-property rights and perhaps some human capital. Growth for these firms could go in many different directions.

One promising remedy is to limit any acquisition of intellectual property by a dominant digital platform to a nonexclusive license. An alternative is to permit the acquisition only on the condition that the acquiring firm license the acquired

407. See Kevin A. Bryan & Erik Hovenkamp, *Startup Acquisitions, Error Costs, and Antitrust Policy*, 87 U. CHI. L. REV. 331, 334-38 (2020).

408. R.H. Coase, *The Problem of Social Cost*, 3 J.L. & ECON. 1, 2-6 (1960).

409. See *infra* Section III.B (discussing killer acquisitions).

intellectual property to others on fair and reasonable terms.⁴¹⁰ The difference is that the first alternative leaves the smaller firm as a viable alternative on the market. By contrast, requiring compulsory licensing preserves the intellectual-property assets to the public, but extinguishes the acquired firm.⁴¹¹ Any growth potential contained in the acquired firm's intellectual-property rights will be available to others.

These remedies are feasible because intellectual-property rights are both nonrivalrous and divisible. It would be unwieldy to say the least to condition a firm's acquisition of a production plant on its sharing the plant's space with a third-party competitor. Plants are tangible assets, typically not readily subdivided, and a judicially managed sharing agreement would confront a host of practical problems. Not so, however, with most intellectual-property rights. If a firm acquires a nonexclusive right in a patent, other firms can practice that patent as well, and without any need to coordinate output with the primary owner. Indeed, coordination among licensees of the same patent is usually unlawful unless the licensees are engaged in a common enterprise such as a joint venture.⁴¹²

Section 7 of the Clayton Act is broad enough to support such a remedy. If not, however, Congress should step in, even at the risk of some overdeterrence. Large digital platforms should simply be forbidden from acquiring another firm except for unconditioned nonexclusive rights to intellectual property. A smaller firm could still make the acquisition, perhaps making it even more likely that the new entity would evolve into a formidable competitor.

Depending on the acquired firm's own growth prospects or the availability of alternative purchasers, such a limitation could reduce its value. The dominant acquiring firm is obtaining the right to integrate or use, but not the power to exclude. Depending on the circumstances, these two rights can have very different values. At one extreme, consider the firm that purchases a firm with a competing patent and then simply shuts that technology down. In that case the value of the integration right is zero. The thing that makes the asset valuable to the acquiring firm is the exclusion right. This was the case in both the Supreme Court's *Paper Bag* decision in 1908,⁴¹³ and the Federal Circuit's more recent

410. See Kevin A. Bryan & Erik Hovenkamp, *Antitrust Limits on Startup Acquisitions*, 56 REV. INDUS. ORG. 615, 623-29 (2020); Bryan & Hovenkamp, *supra* note 407, at 339-42.

411. Bryan & Hovenkamp, *supra* note 407, at 353-55. They argue for the compulsory-licensing alternative.

412. See Herbert Hovenkamp, *Antitrust and the Patent System: A Reexamination*, 76 OHIO ST. L.J. 467, 524, 540 (2015).

413. *Cont'l Paper Bag Co. v. E. Paper Bag Co.*, 210 U.S. 405, 429 (1908) ("As to the suggestion that competitors were excluded from the use of the new patent, we answer that such exclusion may be said to have been of the very essence of the right conferred by the patent, as it is the privilege of any owner of property to use or not use it, without question of motive.").

Trebro decision.⁴¹⁴ Neither decision raised antitrust issues. As a matter of competition policy, however, both reached the wrong result by approving transactions that facilitated competitor exclusion, while doing nothing to promote innovation or improve the productive capacity or efficiency of the acquirer.

Indeed, this is one particular use of a patent that actually deters rather than promotes innovation. If no patent had ever issued, others would still be able to develop the technology for themselves. By buying up a patent, shutting it down, and bringing infringement suits against others, however, the acquiring firm is not only obtaining no integration value from the patent, but it is also denying others the right to develop that technology, even if independently.⁴¹⁵

Limiting the dominant firm's acquisition to a nonexclusive license of all relevant intellectual-property rights essentially permits the firm to acquire the integration value of the target, but not the exclusion value. If the acquiring firm intends to use the acquired technology, the nonexclusive license gives it everything that it needs.

B. Killer Acquisitions

A killer acquisition occurs when a firm buys another firm in order to remove its productive assets from the market.⁴¹⁶ The problem is not new. In 1916, American Can was condemned as a monopoly for buying up rival can-making firms and promptly dismantling their assets in order to keep them off the market.⁴¹⁷

414. *Trebro Mfg., Inc. v. FireFly Equip., LLC*, 748 F.3d 1159, 1172 (Fed. Cir. 2014); see Erik Hovenkamp & Thomas F. Cotter, *Anticompetitive Patent Injunctions*, 100 MINN. L. REV. 871, 875 (2016).

415. The infringement defendant in *Trebro* appears to have been an independent inventor. See *Trebro Mfg., Inc. v. FireFly Equip., LLC*, 2013 WL 1655993, (D. Mont. Apr. 17, 2013), *rev'd*, 748 F.3d 1159, 1172 (Fed. Cir. 2014).

416. See Igor Letina, Armin Schmutzler & Regina Seibel, *Killer Acquisitions and Beyond: Policy Effects on Innovation Strategies* 1 (Ctr. for Econ. Policy Research, Working Paper No. DP15167, 2020), https://cepr.org/active/publications/discussion_papers/dp.php?dpno=15167 [<https://perma.cc/J78P-C6H7>]; see, e.g., Complaint for Injunctive and Other Equitable Relief at 2, *FTC v. Mallinckrodt Ard Inc.*, No. 1:17-cv-00120 (D.D.C. Jan. 25, 2017), 2017 WL 242849; see also Colleen Cunningham, Florian Ederer & Song Ma, *Killer Acquisitions*, 129 J. POL. ECON. 649, 650 n.2 (2021) (giving several examples of killer acquisitions, mostly from the pharmaceutical industry); Amy C. Madl, *Killing Innovation?: Antitrust Implications of Killer Acquisitions*, 38 YALE J. REG. BULL. 28, 34-35 (2020) (defending some killer acquisitions in the pharmaceuticals industry).

417. *United States v. Am. Can Co.*, 230 F. 859, 875 (D. Md. 1916) (noting the defendant's practice of shutting down rivals' plants almost immediately after acquisition whereby "[t]wo-thirds of the plants bought were abandoned within two years of their purchase. Many of them were never operated by the defendant at all."). For a discussion of market entrants' ability to disrupt

American Can acquired rivals who used older or less efficient technology. Today the opposite is likely to be true: a firm may acquire a startup's superior or differentiated technology and shut it down, simply to protect its own turf.⁴¹⁸ In the process, it denies society the benefits of the improvements.

A variation of the same problem occurs when a firm acquires exclusive rights in a patent and declines to practice it but then sues rivals for infringement.⁴¹⁹ In other cases, a firm acquires a small research firm in an area such as pharmaceuticals with promising research projects in the works, and then shuts them down. Often the acquired firm has a market share of zero because the acquired research projects have not yet been marketed.⁴²⁰ For example, the assets of an acquired pharmaceutical-research firm may include drugs that are in development but not yet fully tested or brought to market.⁴²¹

In its simple form the problem of killer acquisitions should be easy. Rather than treating them like mergers, we should treat them more like cartels. Any failure of the legal system to take a more aggressive position is largely a result of classification myopia.

The reason we permit most mergers rather than making them unlawful *per se* is because of their potential to generate efficiencies.⁴²² But a killer acquisition yields no efficiencies because the acquiring firm never puts the acquired assets to any use. Economically a merger-plus-shutdown is no different than the output reduction that attends a cartel.⁴²³ Indeed, the only reason these acquisitions occur is because the alternative of agreeing with a firm to shut down a plant in exchange for a payment of money would be unlawful *per se*.⁴²⁴ If a firm

incumbent industry rivals, see TIM WU, *THE MASTER SWITCH: THE RISE AND FALL OF INFORMATION EMPIRES* 20 (2010).

418. See Mark A. Lemley & Mark P. McKenna, *Unfair Disruption*, 100 B.U. L. REV. 71, 74-76 (2020).

419. See *supra* note 413 and accompanying text.

420. Cunningham et al., *supra* note 416, at 2 (modeling acquisitions when the target firm's assets are still under development and project success is uncertain).

421. See Nils Behnke & Norbert Hültenschmidt, *New Path to Profits in Biotech: Taking the Acquisition Exit*, 13 J. COM. BIOTECHNOLOGY 78, 84 (2007).

422. See AREEDA & HOVENKAMP, *supra* note 9, ¶¶ 970-76; Herbert Hovenkamp, *Appraising Merger Efficiencies*, 24 GEO. MASON L. REV. 703, 704 (2017).

423. Cf. Jonathan Cave & Stephen W. Salant, *Cartel Quotas Under Majority Rule*, 85 AM. ECON. REV. 82, 94 & n.18 (1995) (noting monopolists tend to shut down the least efficient plants in order to reduce output while cartels rarely do).

424. See *United States v. Socony-Vacuum Oil Co.*, 310 U.S. 150 (1940) (holding that an agreement to reduce output is *per se* unlawful); Shubha Ghosh, *Relaxing Antitrust During Economic Downturns: A Real Options Analysis of Appalachian Coals and the Failing Firm Defense*, 68 ANTITRUST L.J. 111 (2000). For a discussion of the European Commission's selective allowance of output restrictions, see Andre Fiebig, *Crisis Cartels and the Triumph of Industrial Policy over Competition Law in Europe*, 25 BROOK. J. INT'L L. 607, 608 (1999), which discusses "crisis

purchases a rival for \$1 million and then shuts it down, the transaction is treated as a merger. However, if the firm pays a rival \$1 million to shut down its own plant, the transaction would be treated as a cartel.

Two qualifiers are important. One has to do with the acquiring firm's intentions at the time of the acquisition. An easy case is one like *American Can*, where the purchasing firm acquired rivals for the purpose of removing their productive assets from the market and closed them immediately without ever operating them.⁴²⁵ But other cases are harder to classify. Not all mergers work out.⁴²⁶ An acquiring firm may make its best efforts to employ an acquired firm's assets but later determine that the acquisition is a failure. Antitrust policy should not have a per se rule against postacquisition shutdowns where the acquiring firm has tried to put the acquired assets to productive use.⁴²⁷

Another qualifier is the possibility of partial shutdowns. For example, a firm may acquire another firm in order to integrate and use some of its assets but not others. Such cases require an inquiry into relative substantiality.⁴²⁸ The assets that are kept in production may be small or may be complements to the acquiring firm's production, indicating that the merger would not be challengeable if one looked only at those. However, the assets that are shut down may have posed a significant competitive threat if they were brought to production. Here, one admonition is that significant harms in one market cannot be offset by benefits in a different market⁴²⁹—and certainly not in cases where the threat is substantial

cartels"—or permissible "agreements between most or all competitors in a particular market to systematically restrict output and/or reduce capacity in response to a crisis in that particular industry." For a historically similar approach, see *National Ass'n of Window Glass Manufacturers v. United States*, 263 U.S. 403 (1923), which upheld an agreement to shut down production during wartime in alternating periods negotiated between manufacturers and labor. Such agreements were unenforceable under common law. See, e.g., *Clemons v. Meadows*, 94 S.W. 13, 14 (Ky. 1906) (holding that an agreement between two hoteliers where one would shut down for a period of three years contravened public policy).

425. *United States v. Am. Can Co.*, 230 F. 859, 875 (D. Md. 1916); see *supra* notes 417–418 and accompanying text.

426. See Wendy B. E. Davis, *The Importance of Due Diligence Investigations: Failed Mergers and Acquisitions of the United States' Companies*, 2 ANKARA B. REV. 5 (2009).

427. See, e.g., Madl, *supra* note 416, at 35 (arguing that the acquisition of an alternative drug might give the acquiring firm a backup). Madl also argues that acquiring a firm would allow the acquirer to obtain testing data of a drug in clinical trials. *Id.* at 36. But in that case, sharing of the data would be a superior alternative.

428. For example, Disney, after it acquired 21st Century Fox in 2019, closed down Fox 2000, one of the acquired studios, while retaining 20th Century Fox and Fox Searchlight. Brent Lang, *Disney Retiring Fox 2000 Label*, VARIETY (Mar. 21, 2019, 2:35 PM PT), <https://variety.com/2019/film/news/disney-retiring-fox-2000-label-1203169597> [https://perma.cc/77E2-BRXF].

429. See AREEDA & HOVENKAMP, *supra* note 9, ¶ 972.

and the efficiencies in the integrated market are not merger specific. Further, enforcers and courts should consider whether a spinoff of the threatening assets is a plausible solution. While research projects typically include a significant intellectual-property component, they also include employee talent and perhaps other assets.⁴³⁰

The externally acquired but later unpracticed patent is a variation on the killer acquisition story, which dates back to the Supreme Court's 1908 *Paper Bag* decision.⁴³¹ The dominant firm purchased a patent on technology that was different from its own, and then shelved the technology rather than practicing it.⁴³² Subsequently, the firm brought a successful infringement suit against a rival who entered the market with technology that infringed the unused patent.⁴³³ The resolution in that decision effectively used the patent system to harm competition in both the short and the long run.⁴³⁴ First, it removed the possibility of price competition between the dominant firm and a prospective new entrant. Second, it restrained rather than furthered innovation, using patent law to deprive the market of new technology.

Limiting the dominant firm to a nonexclusive license solves the killer-acquisition problem to the extent that the acquired assets are intellectual-property rights. Indeed, if the acquirer does not intend to use the acquired assets at all, then acquisition of a nonexclusive right has no value in the short run.

430. Sometimes such acquisitions occur so that the acquiring firm can hire the target firm's employees, rather than other productive assets. See John F. Coyle & Gregg D. Polsky, *Acqui-Hiring*, 63 DUKE L.J. 281, 287-301 (2013); see also Peter Lee, *Innovation and the Firm: A New Synthesis*, 70 STAN. L. REV. 1431, 1435 (2018) (arguing that many such acquisitions are efforts to obtain both talented workers and the acquired technologies).

431. *Cont'l Paper Bag Co. v. E. Paper Bag Co.*, 210 U.S. 405, 422-26 (1908). For further discussion of *Paper Bag*'s implications, see Herbert Hovenkamp, *The Emergence of Classical American Patent Law*, 58 ARIZ. L. REV. 263, 287-89 (2016).

432. *Paper Bag*, 210 U.S. at 406.

433. The defendant's use of the patent did not literally infringe the plaintiff's patent, but the Supreme Court found infringement by expanding the patent-law doctrine of equivalents. *Id.* at 415. On the relevance of this holding in the development of the doctrine of equivalents, see Brian J. Love, *Interring the Pioneer Invention Doctrine*, 90 N.C. L. REV. 379, 392 (2012).

434. This was also the case in *Trebro Manufacturing, Inc. v. FireFly Equipment, LLC*, 748 F.3d 1159, 1172 (Fed. Cir. 2014) ("[A]s to the public interest, there is scant evidence on this record showing that an injunction would harm the public. The patent deals with sod harvesting and covers a small market that may not have a broad-reaching effect."). See Hovenkamp & Cotter, *supra* note 414, at 889-93.

CONCLUSION

A common complaint about antitrust is that it is costly and slow. While both observations ring true, the social cost of fact-intensive decision making is much less than that of making incorrect decisions that can affect millions of consumers, employees, and other constituents. Antitrust is a litigation-driven enterprise that requires decisionmakers to focus on the specific practices and assets before them. Unlike legislative regulation, antitrust does not group classes of industries together for common treatment, but that also means it is less susceptible to regulatory capture.

Nevertheless, antitrust can be subject to interest-group biases. Consumer welfare is a public good. Consumers are numerous, heterogeneous, and for the most part, poorly organized. By contrast, firms who profit from underenforcement are much fewer and more unitary in their goals. Individually, the stakes firms have in the preservation of monopoly are far higher than the individual gains that accrue from competition, even though consumers' aggregate gains are much larger, particularly when those of labor are included.⁴³⁵

Antitrust today suffers from an antienforcement bias that is scientifically obsolete and produces too many false negatives. This will hopefully pass as courts become more familiar with the economics of digital platforms and networks. Decisions such as *Amex* in the Supreme Court and *Qualcomm* in the Ninth Circuit indicate that development still has far to go. The rule of reason in particular has become much too burdensome for plaintiffs. Antitrust policy would perform better if plaintiffs had a lighter burden in establishing a prima facie case, with a heavier answering burden on defendants, who typically have better control of the relevant facts.⁴³⁶

Antitrust's fact-specific, individual approach to intervention is usually superior to regulation. A few problems, such as management of consumer information, cut across all markets and regulation can be effective. Most other failures are specific to the firm, however. Calls for categorical treatment often amount to regulation by another name. It is easy to speak universally about these markets as winner-take-all, as having high barriers to entry, or as unnecessarily harmful to competitors or consumers. An example is broad statements of the nature that the big digital platforms must be broken up. These overly generalized conclusions frustrate rather than further reasonable competitive analysis. Platforms differ from one another by almost as wide a range as firms differ in general.

435. See Erik Hovenkamp & Steven C. Salop, *Asymmetric Stakes in Antitrust Litigation* 4 (USC CLASS Research Papers Series, No. CLASS20-12, 2020), <https://ssrn.com/abstract=3563843> [<https://perma.cc/H4EF-SU99>].

436. On this point, see HOVENKAMP, *supra* note 26, § 5.63.

Market-power inquiries in cases involving platforms do produce some unique factual issues. When market power is assessed by conventional market-share methods, a single relevant market should be defined with reference to one side. Effects on the other side must be considered to the extent that they strengthen or weaken any inference to be drawn from market shares. Direct economic measures will usually produce better results, although effects on the other side of two-sided platforms must be considered even when power is measured directly. Finally, the threat of competitive harm in networked markets can occur at lower market shares than the level required in conventional markets.

Antitrust's fact-specific approach is also essential for the construction of appropriate remedies. The goal of a remedy should be consistent with the output-expanding goals of the antitrust laws themselves. Simple injunctions should always be considered. Often they can correct discrete problems while doing little to no damage to the efficiency and integrity of the firm or the market in which it operates. In addition, results are typically easier to predict.

As the long history of antitrust shows, breaking apart assets can be dangerous because it threatens losses of beneficial economies of scale or scope. Other approaches with more promise include the restructuring of management rather than assets, or else mandated interoperability or pooling. Restructuring management can enable firms to function more competitively by treating their internal decision making as a market that is itself reachable under the antitrust laws. In appropriate cases, interoperability can expand the range of beneficial network effects while doing no harm to the firm's internal efficiencies.

Competition problems in digital platforms present some novel challenges, but most are within reach of antitrust law's capacity to handle them. The courts and other antitrust policy makers should treat digital platforms for what they are—firms that have unique features, but not so unique that we must abandon what we know about competition in high-technology, product-differentiated markets.