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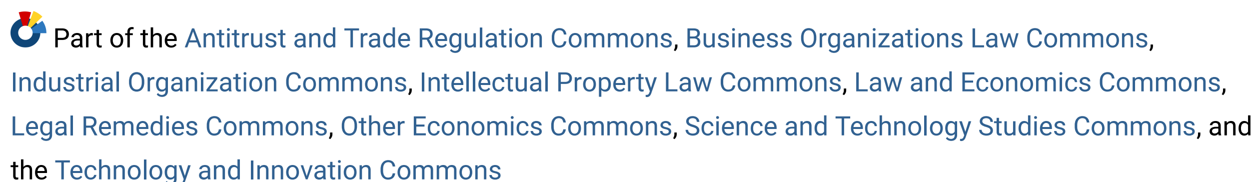

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ANTITRUST AND PLATFORM MONOPOLY

130 Yale L.J. __ (2021)

Herbert Hovenkamp*

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INTRODUCTION

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

This is evident in the forty responses to a House Judiciary Committee's request in early 2020 for recommendations concerning digital platform monopoly.[1] Some believe that everything is fine and

[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 COMMITTEE ON JUDICIARY, https://judiciary.house.gov/issues/issue/?IssueID=14921 [https://perma.cc/HM6U-RW47]. For some examples, see Jonathan B. Baker et al., *Joint Response to the House Judiciary Committee on the State of Antitrust Law and Implications for Protecting Competition in Digital Markets* (Apr. 30, 2020), https://judiciary.house.gov/uploadedfiles/joint_submission_from_michael_kades_and_antitrust_expert_coalition.pdf [https://perma.cc/UE78-CHMW]; Jonathan M. Barnett et al., *Joint Submission of Antitrust Economists, Legal Scholars, and Practitioners to the House Judiciary Committee on the State of Antitrust Law and Implications for Protecting Competition in Digital Markets* (May 15, 2020), https://judiciary.house.gov/uploadedfiles/joint_submission_from_international_center_for_law__economics.pdf [https://perma.cc/62QW-KJ4N; James C. Cooper, Joshua D. Wright & John M. Yun, *Prepared Statement Before the Investigation into the State of Competition in the Digital Marketplace* (Apr. 17, 2020),

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we should make few substantive changes.[2] 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] One question underlying all of this is whether antitrust law's focused and litigation driven approach is sufficient to address competition problems in digital platforms? Or are the problems so common and widespread that they require more pervasive public control?

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https://judiciary.house.gov/uploadedfiles/submission_from_joshua_wright_james_cooper_and_john_yun.pdf [https://perma.cc/MD4A-AR75]; Thomas A. Lambert, *Submission* (Apr. 17, 2020), https://judiciary.house.gov/uploadedfiles/submission_from_thomas_lambert.pdf [https://perma.cc/8PAA-UVQ8]; Robert H. Lande, *Submission on Competition in the Digital Marketplace* (Apr. 16, 2020), https://judiciary.house.gov/uploadedfiles/submission_from_robert_lande.pdf [https://perma.cc/2G8Q-FBFB]; D. Daniel Sokol, *Antitrust House Judiciary Committee Antitrust Submcommittee Testimony*, https://judiciary.house.gov/uploadedfiles/submission_from_daniel_sokol.pdf [https://perma.cc/JVS2-NLMC]; Spencer Weber Waller, *Submission* (Mar. 30, 2020), https://judiciary.house.gov/uploadedfiles/submission_from_spencer_waller_weber.pdf [https://perma.cc/5PYR-4JPS]; *see also* Thurman Arnold Project at Yale, *Digital Platforms and Antitrust*, YALE SCH. MGMT., https://som.yale.edu/faculty-research-centers/centers-initiatives/thurman-arnold-project-at-yale/digital-platforms-and-antitrust [https://perma.cc/L5EZ-EHN3] (collecting resources). For my own response see Herbert Hovenkamp, Submission (Apr. 17, 2020), https://judiciary.house.gov/uploadedfiles/submission_from_herbert_hovenkamp.pdf [https://perma.cc/U6Z4-QLSA].

[2] *See, e.g.*, Barnett et al., *supra* note **Error! Bookmark not defined.**.

[3] *See, e.g.*, ZEPHYR TEACHOUT, BREAK 'EM UP: RECOVERING OUR FREEDOM FROM BIG AG, BIG TECH, AND BIG MONEY (2020); Sophia Lam, *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*, 106 CORNELL L. REV. (forthcoming 2020).

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Cutting against broad statutory regulation is the fact that digital platforms are extremely diverse from one another. Regulation in an industry such as air travel, electric power, or telecommunications applies to firms with common technologies and similar market relationships. This is not the case with the four major digital platforms that have drawn so much media and political attention – namely, Amazon, Apple, Facebook, and Google. They have different inputs. While there is some overlap, they sell different products, only some of which are digital. They deal with various third parties including customers 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 statutory control of individual aspects of their business, such as advertising or acquisitions, is a possibility. But that would still leave vast amounts of territory to the antitrust laws

This article argues that sustainable competition in platform markets is possible, and that the less intrusive, more focused, and more individualized approach of the antitrust laws is better for consumers and most other affected interest groups. It will be less likely to reduce product or service quality, limit innovation, or reduce output. As a result, in those areas where antitrust law applies statutory regulators should give federal judges a chance.

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.[4] This leaves regulators toothless when confronted with an industry that behaves in unexpected ways. Others are more circumspect, appreciating that both markets and firms are institutions that can be quite different from one another. As a result, they 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*), Justice Breyer in dissent was much more comfortable than the Court's

[4] *See* Herbert Hovenkamp & Fiona Scott Morton, *Framing the Chicago School of Antitrust Analysis*, 168 U. PA. L. REV. (forthcoming 2020).

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majority with factual examination of the particular digital market before it.[5] The majority spoke mainly in generalities, largely ignored the record, and drew legal conclusions that are inconsistent with fundamental economic principles.[6] Antitrust law needs to treat digital platform markets for what they are: markets that have some unique characteristics, but markets nonetheless. For the most part, competition problems in them can be controlled with the antitrust tools that we have.

A digital platform is a website, app, or other digital venue that interacts commercially[7] with one or more groups of users. A "two-sided" digital platform is one that facilitates activities involving at least two different but interdependent groups of users.[8] In some cases (Amazon, eBay, Uber, 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 commercial transactions do support the platform as a profit center.

This paper 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. Then it discusses the form that remedies for anticompetitive abuses should take. One area that may require new legislation or at least a change in judicial thinking is platform mergers.[9]

Beyond that, there are steps courts could take without new legislation. One novel proposal is that intrafirm decision making could be restructured in ways that facilitate competition *inside* a platform,

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[5] 138 S. Ct. 2274, 2294-97 (2018) (Breyer, J., dissenting).

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

[7] 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 ¶¶ 260-262 (5th ed. 2020).

[8] *See infra* Section I.B.

[9] *See infra* Part III.

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rather than between the platform and other entities. This could be induced without breaking up the platforms themselves. Another 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 more competitive performance without the significant losses in productivity and consumer value that typically result from a breakup. Existing law provides ample precedent to support these remedies.[10]

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.[11] Alternative articulations, such as concern for the "competitive process," provide no content against which results can be evaluated. Further, antitrust has no statutory warrant to condemn firms simply because they are very large, although that would certainly make the analysis easier. Size and market power do not always go hand in hand.

The power question for digital platforms 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 effects on the other side.

1. Measuring Power Directly

[10] *See infra* Section II.C.2.

[11] *See* AREEDA & HOVENKAMP, *supra* note 7, ¶ 501; William M. Landes & Richard A. Posner, *Market Power in Antitrust Cases*, 94 HARV. L. REV. 937, 937 (1981).

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Traditionally, courts have measured market power "indirectly," as a percentage of a properly defined "relevant market."[12] A market consists of a group of products or services that are close substitutes for each other.[13] 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 necessarily require a market definition, avoiding questions of how broad or narrow 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 them are available.[14] Nearly all transactions in platform markets produce a digital record, so the data should generally be available. 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

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[12] On the methodology, see AREEDA & HOVENKAMP, *supra* note 7, ¶¶ 530-571.

[13] *Id*. ¶ 530a (measuring markets by scope of "hypothetical cartel" or "hypothetical monopoly").

[14] *Id*. ¶ 521 (discussing the economic literature). S*ee 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 also* Louis Kaplow, *On the Relevance of Market Power*, 130 HARV. L. REV. 1303 (2017) (noting numerous weaknesses in traditional market share measures); Louis Kaplow, *Market Definition: Impossible and Counterproductive*, 79 ANTITRUST L.J. 361 (2013) (similar). On the methodologies, *see* 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); Jonathan B. Baker & Timothy F. Bresnahan, *Empirical Methods of Identifying and Measuring Market Power*, 61 Antitrust L.J. 3 (1992). At the macro level, *see* Robert E. Hall, *Using Empirical Marginal Cost to Measure Market Power in the US Economy* (NBER Working Paper, Nov., 2018), available at https://www.nber.org/papers/w25251.

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platforms.[15] In any event, the process is highly data driven and fact-specific and has become a staple of expert economic testimony.[16]

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 mergers.[17] The Supreme Court

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[15] *See, e.g.*, David S. Evans, *Multisided Platforms, Dynamic Competition, and the Assessment of Market Power for Internet-Based Firms* 29-32 (Univ. of Chicago Coase-Sandor Institute, Working Paper No. 753, 2016), https://ssrn.com/abstract=2746095 [https://perma.cc/B5LH-P5ZK] (urging caution when using market-share data).

[16] *See, e.g*., Elena Argentesi & Lapo Filistrucchi, *Estimating Market Power in a Two-Sided Market: The Case of Newspapers*, 22 J. APPLIED ECONOMETRICS 1247 (2007); Eric Emch & T. Scott Thompson, *Market Definition and Market Power in Payment Card Networks*, 5 REV. NETWORK ECON. 45, 45 (2006); Minjae Song, *Estimating Platform Market Power in Two-Sided Markets with an Application to Magazine Advertising* (Simon Sch. Working Paper No. FR 11-22, 2011), https://ssrn.com/abstract=1908621 [https://perma.cc/BM7F-KREG]; Chris Pike, *Rethinking Antitrust Tools for Multi-Sided Platforms*, 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 and pointing out strengths and difficulties with each). 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, 1063 (2017).

[17] "Unilateral effects" merger analysis considers whether a merger of two relatively proximate firms in a product differentiated market will give the post-merger 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 7, ¶ 913). For a good discussion expressing 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).

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has also approved more direct measures in some cases involving horizontal restraints.[18]

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.[19] The Court's rationale is difficult to understand,[20] and the effect at this writing is still unclear. However, a high percentage of antitrust challenges to platforms are likely to be vertical because they involve contracts between a platform as seller or purchaser and the various product suppliers, advertisers, and even customers with whom it deals. These could include most-favored-nation clauses, exclusive dealing or tying, or other types of exclusionary vertical agreements.[21]

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 definition.[22] One can neutralize this

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[18] *See, e.g.*, Fed. Trade Comm'n v. Actavis, Inc., 570 U.S. 136, 157 (2013); Fed. Trade Comm'n v. Ind. Fed'n of Dentists, 476 U.S. 447, 460-461 (1986).

[19] 138 S. Ct. 2274, 2286 (2018).

[20] The issue was not briefed, and the Court's entire discussion was in a footnote, which read:

> 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. 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.

Amex, 138 S. Ct. at 2285 n.7 (citations omitted).

[21] *See infra* notes 194-196 and accompanying text.

[22] Brown Shoe Co. v. United States, 370 U.S. 294, 315-17 (1962) (interpreting the Clayton Act's "section of the country" and "line of

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requirement by using direct evidence to establish that a firm or group of firms has the requisite power over price, and then use that fact to support the conclusion 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.[23] Once direct econometric analysis has told us that a firm or group of firms has sufficient power to charge a noncompetitive price, we can express that conclusion by saying that this grouping constitutes a relevant market.

Traditional market definition measures also produce one difficulty that can be particularly relevant to platform markets. If a market is product-differentiated, any conclusion about market definition is wrong.[24] Market definition is necessarily binary. It can count something as inside or outside a market but cannot meter anything in between.

For example, consider whether "digital advertising" is a relevant market. That question is highly 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, however, we have effectively concluded that digital advertising and other more traditional forms of advertising do not compete with each other, which is clearly incorrect. By contrast, if we group all forms of advertising into a single "advertising" market, that implies that all forms are perfect competitors such that people do not distinguish among them. That is also incorrect. By contrast, direct measures are able to examine factors such as the rate at which firms change their purchases in response to a price change that effects one type of advertising but not the other.

Two-sidedness affects measurements of market power to the extent that there are offsetting increases and decreases across the two

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commerce" language as requiring a geographic market and a product market, respectively).

[23] HERBERT HOVENKAMP, FEDERAL ANTITRUST POLICY: THE LAW OF COMPETITION AND ITS PRACTICE § 3.1 (6th ed. 2020) [hereinafter HOVENKAMP, FEDERAL ANTITRUST POLICY].

[24] On the impact of product differentiation, see *infra* Section I.C.4.

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sides.[25] 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 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 revenue for the card issuer comes almost entirely from merchants.[26]

For *both* indirect and direct methodologies, power assessment on two-sided platforms requires consideration of reactions that occur on the opposite side. 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. Are these an assertion of market power over passengers? After all, the price goes up and costs are not obviously higher. Or is surge pricing simply an exercise in participation balancing intended to ration scarce drivers during a period of high demand?[27] These are testable propositions, but determining them requires data from both sides of the market.

Market power requirements also vary with the antitrust offense. For example, proof of unlawful contractual restraints, such as tying or exclusive dealing, requires a smaller market share than does monopolization. For contractual practices the defendant need not be

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

[26] *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).

[27] 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, No. 15 Civ. 9796, 2020 WL 4482095, (S.D.N.Y. Aug. 3, 2020) (sustaining arbitrator's conclusion that Uber's surge pricing did not violate the antitrust laws).

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dominant in its market.[28] No court has found sufficient market power to condemn a firm of single-firm monopolization in the absence of a market definition.[29] 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.[30]

The use of indirect proof in monopolization cases unquestionably distorts results. For example, in a very significant digital monopoly case, *United States v. Microsoft Corp.*,[31] the government proceeded by indirect evidence of market share in a relevant market. The court accepted a market definition that excluded the Apple operating system used on Macintosh computers.[32] That approach runs straight into the problem noted above. Including Windows and the Mac OS in the same market would have treated them as 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.

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

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[28] HOVENKAMP, FEDERAL ANTITRUST POLICY, *supra* note 23, § 10.3a (minimum market share for tying is about 30%); *id.* § 10.9e (minimum share for exclusive dealing is similar).

[29] There are 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 conduct indicated power, even though it had already been established on the basis of market share).

[30] Spectrum Sports v. McQuillan, 506 U.S. 447, 452-453 (1993) (reversing the Ninth Circuit and overruling earlier cases such as *Lessig v. Tidewater Oil Co.*, 327 F.2d 459 (9th Cir. 1964)).

[31] 253 F.3d 34 (D.C. Cir. 2001). For a critique of the Court's indirect methodology for proving market power in that case, see Crane, *supra* note 17, at 70-72.

[32] *Microsoft*, 253 F.3d at 53; *see also* European Commission Decision on AT.40099—Google Android of 18 July 2018, C(2018) 4761, https://ec.europa.eu/competition/antitrust/cases/dec_docs/40099/40099_9993_3.pdf [https://perma.cc/LP2B-LD3Y] (excluding Apple iPhone OS from the relevant market for Android OS).

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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. The issue was not briefed, but the record became irrelevant because the plaintiff had relied entirely on direct evidence of power.

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.[33] Another is the collection of noncompeting products sold by office supply stores, such as paper clips, staplers, and pencils.[34] The Supreme Court has confirmed lower court conclusions that the diverse services performed by a bank, such as checking accounts and loans, can be clustered into a single market.[35] It also agreed to a single-market definition that covered alarm services for burglary, fire, and smoke.[36]

Clustering noncompeting products for purposes of market power analysis requires more than the simple observation that the products are sold in the same store. For example, Walmart sells both toasters and chainsaws, but that fact alone does not justify defining a toaster-chainsaw market. Rather, a cluster market is proper when

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[33] *E.g.*, Promedica Health Sys., Inc. v. Fed. Trade Comm'n, 749 F.3d 559 (6th Cir. 2014) (clustering medical services that use similar facilities and assets).

[34] *E.g.*, Fed. Trade Comm'n 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.").

[35] *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, and both commercial and household services); *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) (similar).

[36] United States v. Grinnell Corp., 384 U.S. 563, 571-75 (1966).

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clustering yields cost savings or transactional advantages and these advantages are difficult to duplicate. As a result, the firm is able to profit by raising its prices higher than its costs. These are sometimes referred to as "economies of joint provision."[37] In effect, while traditional markets are groups of substitutes, the concept of cluster markets additionally recognizes that combining complements can sometimes produce market power.

Clustering has been used in the case law only for purposes of market definition, and thus applies to indirect proof. The approach that it takes, however, is actually more susceptible to direct measurement because it requires an assessment of transaction costs savings that result from clustering.[38] While diverse products cannot be aggregated, price-cost margins can be.

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

In some cases, such as Google, the diverse products and services are not even provided on the same website. There is no case law 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,

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[37] *See* AREEDA & HOVENKAMP, *supra* note 11, ¶ 565c.

[38] *See* Ian Ayres, *Rationalizing Antitrust Cluster Markets*, 95 YALE L.J. 109, 114-115 (1985) (cluster markets defined in terms of economies of scope and transactional complementarities). *Accord* Gregory J. Werden, *The History of antitrust Market Delineation*, 76 MARQUETTE L. REV. 123, 166 (1992) (also noting the inconsistent rationales that courts have used for clustering). *See also* Jonathan B. Baker, *Market Definition: an Analytical Overview*, 74 ANTITRUST L.J. 129 (2007) (arguing against the use of clustering to support traditional market definitions).

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however, then the question whether two products are sold on different platforms is less important.

B. Identifying Two-Sided Platforms

A two-sided market is one that intermediates between at least two interdependent groups, such as internet searchers and advertisers, rideshare users and drivers, or credit card customers and merchants. The fact that business is conducted on a digital platform is not sufficient to establish the existence of a two-sided market. For example, some digital platforms may be nothing more than venues for merchants to sell their own merchandise. Tesla manufactures its own vehicles and sells them principally online through its own digital platform.[39]

In *Amex* the Supreme Court defined two-sided platforms idiosyncratically but narrowly. 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."[40] The Court gave the example of "[n]ewspapers that sell advertisements," which are "arguably . . . two-sided platform[s]," but for which the effects of two-sidedness are small.[41] That conclusion would surprise many economists and other experts who write about two-sided markets. Periodicals supported by both reader subscriptions and advertisers are commonly given as examples of businesses operating in two-sided markets.[42]

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[39] *See* TESLA, https://www.tesla.com [https://perma.cc/Z28A-GMTK]. However, Tesla has had some disputes with states whose law require the presence of a car dealer. *See* Jon Fingas, *Tesla May Open 'Centers' to Get Around Pro-Dealership Laws*, ENDGADGET (Oct. 12, 2019), https://www.engadget.com/2019-10-12-tesla-centers-leak.html [https://perma.cc/9WQR-UL6N].

[40] Ohio v. Am. Express Co., 138 S. Ct. 2274, 2286 (2018).

[41] *Id.*

[42] *E..g*, Ulrich Kaiser & Julian Wright, *Price Structure in Two-Sided Markets: Evidence from the Magazine Industry*, 24 INT'L J. INDUS. ORG. 1 (2006); Elena Argentesi & Lapo Filistrucchi, *Estimating Market Power in a Two-Sided Market: the Case of Newspapers*, 22 J. APPLIED ECONOMETRICS 1247 (2007).

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With that, the Court limited its definition of two-sided platforms to those that "facilitate a single, simultaneous transaction between participants."[43] That, of course, included the credit-card platforms involved in that case. It would very likely also include firms such as Uber or Airbnb, where transactions between suppliers and customers occur directly on the platform. The platform debits the purchaser's credit card and compensates the supplier after taking out its fee.

The Court's definition of two-sidedness would not include Google Search, which is supported by advertising but without individual simultaneous transactions between consumers and advertisers. For the same reason, Facebook and other social-networking sites would not be included. There are not simultaneous one-to-one transactions between users and advertisers who provide revenue. Nor would the Court's definition include media streamers such as Netflix or Spotify whose owners pay a fixed fee that does not vary with use and, in any event, does not go straight to the licensors. 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,[44] but there is no simultaneous one-to-one exchange of 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 that 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. As observed by a leading academic whom

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[43] *Amex*., *id*. at 2286.

[44] Some dating sites offer a free service with more limited features than the version they charge for.

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both the *Amex* majority[45] and dissent[46] 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."[47]

The focus of this article is on digital-platform monopoly and ways of controlling it. The question of two-sidedness will often be relevant, but not always. For example, Google Search would not satisfy the *Amex* Court's definition of a two-sided platform because it involves no simultaneous one-to-one transactions between parties on the two sides. Nevertheless, search markets are clearly two-sided under the criteria that economists generally use to evaluate such markets. Clearly the question of Google's power requires an examination of both user and advertiser activity.

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 accommodate two or more firms and a single firm can maintain a monopoly position only by engaging in exclusionary practices. Notwithstanding overwhelming evidence to the contrary, the market for digital platforms is often said to be winner-take-all.[48] This is rarely true. Even

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[45] 138 S. Ct. at 2281.

[46] *Id.* at 2300 (Breyer, J., dissenting).

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

[48] *See, e.g.*, Daniel A. Hanley, *A Topology of Multisided Digital Platforms*, 19 CONN. PUB. INT. L.J. 271, 289-90 (2020); 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) (although excluding companies that sell products with a positive marginal cost, such as Amazon, and those "whose value clearly depends upon network externalities," like eBay); Thomas R. Eisenmann, *Winner-Take-All in Networked Markets*, HARV. BUS. SCH. (Sept. 11, 2007) (discussing online auction sites). Others are careful to limit the statement to markets subject to indirect network effects. *See, e.g.*, Patrick Barwise, *Nine*

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assuming that some platforms are winner-take-all, however, the policy consequences are unclear. Winner-take-all status may entail 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.[49] Under this reasoning, natural monopoly status may

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Reasons Why Tech Markets are Winner-Take-All, 29 LONDON BUS. SCH. REV. 54, 54-56 (2018); David S. Evans, *Antitrust Issues Raised by the Emerging Global Internet Economy*, 102 NW. UNIV. L. REV. 1987, 2003 (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, 271 (2018); K. Sabeel Rahman, *The New Utilities: Private Power, Social Infrastructure, and the Revival of the Public Utility Concept*, 39 CARDOZO L. REV. 1621, 1641-42 (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 3-6 (2017); and Zeynep Tufekci, *Google Buzz: The Corporation of Social Commons*, TECHNOSOCIOLOGY (Feb. 17, 2010), https://technosociology.org/?p=102 [https://perma.cc/48XM-6QXR]; *see also* Jack M. Balkin, *Information Fiduciaries and the First Amendment*, 49 U.C. DAVIS L. REV. 1183, 1185-87 (2016) (describing certain businesses' dominant control of data); Kristen E. Eichensehr, *Digital Switzerlands*, 167 U. PA. L. REV. 665, 666-67 (2018) (describing the phenomenon of private companies amassing as much power as governments have); Ryan Grim, *Steve Bannon Wants Facebook and Google Regulated Like Utilities*, THE 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?*, 2019 ACAD. MGMT. PROC. 1-2.

[49] *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); Union Leader Corp. v. Newspapers of New England, Inc., 284 F.2d 582, 584 (1st Cir. 1960) (partially recognizing the defense); City of

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indicate a need for utility-style regulation, but not the competition-preferring tools of antitrust enforcement. Others believe natural monopoly status augers for increased antitrust enforcement, because the market itself will not discipline dominant platforms.[50]

Few platforms are natural monopolies. If the market contains room for competition among multiple incumbent firms, regulation is usually a poor alternative.[51] The position argued here is that if the antitrust laws are properly applied, antitrust will be superior in most cases to broad legislative regulation. Regulation rarely comes close to mimicking competitive behavior. It necessarily generalizes and applies the same rules to several firms in an area, while antitrust requires inquiry into specific facts about each firm. This is particularly important if the firms in question are themselves quite diverse from one another.

Regulation also entrenches existing technologies, making turnover less likely. 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.[52] Of course, proper regulatory design

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Cleveland v. Cleveland Elec. Illuminating Co., 538 F. Supp. 1306, 1314-15 (N.D. Ohio 1980) (recognizing the 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); *see also* Richard A. Posner, *Natural Monopoly and its Regulation*, 21 STAN. L. REV. 548, 586-587 (1969) (discussing natural monopoly as a merger defense).

[50] Hanley, *supra* note 48, at 274-75; *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 4 (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].

[51] *See* STEPHEN G. BREYER, REGULATION AND ITS REFORM 191-197 (1982).

[52] *See* discussion *infra* note 217 and accompanying text; *and see* Howard A. Shelanski, *Adjusting Regulation to Competition: Toward a New*

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might partially 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 down wires that are installed and operated most efficiently if 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 competitively.

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, whether or not Amazon 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 accomplished that task in some markets, but the same approach also applies to platforms.[53]

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 under the antitrust laws.

The fact that the platforms are not natural monopolies also justifies heightened concern with platform acquisitions of nascent

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Model for U.S. Telecommunications Policy, 24 YALE J. REG. 55 (2007). Classic sources include MICHAEL A. CREW & PAUL R. KLEINDORFER, THE ECONOMICS OF PUBLIC UTILITY REGULATION 120-24 (1986); Harvey Averch & Leland L. Johnson, *Behavior of the Firm Under Regulatory Constraint*, 52 AM. ECON. REV. 1052 (1962).

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

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firms. New entry should be making these markets more competitive, but systematic acquisition of recent entrants blunts competitive pressure.[54]

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 might exist for the status of being the natural monopolist, and antitrust policy can encourage such competition.[55] Second, natural monopoly status is not necessarily permanent. Its duration depends on technology and market size, both of which can change.

Five interrelated factors determine the existence of a natural monopoly, with whatever competition policy choices that entails. 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;
4. lack of significant product differentiation; and
5. lack of interoperability or data sharing.

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

Most digital platforms have competitors in at least some of the markets in which they operate. Today online sellers of all sizes appear

[54] *See infra* Part III.

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

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everywhere, ranging from single outlet restaurants to small grocers to online sellers of flowers and to numerous newspapers, magazines, and other periodicals. Online firms such as Carvana.com compete nationally in the sales of used cars with thousands of small brick-and-mortar dealers, many of whom have an internet presence themselves.[56] 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.[57]

Competitive markets change all the time and the market shares of individual firms in them 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 video tape. Sony's Betamax format survived in the market for roughly 25 years until it finally lost a standards battle with VHS tape.[58] 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.[59] For decades there has been a battle between the dominant architectures of personal computers, Apple Macintosh OS and Microsoft Windows.

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

[57] *See Top 10 E-Commerce Retailers in the U.S. in 2020*, MARKETING 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).

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

[59] *See* Ben Drawbaugh, *Two Years of Battle Between HD DVD and Blu-ray: A Retrospective*, ENDGADGET (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].

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For several years Apple's iPhone operating system has competed with the Android OS for the smartphone device market.[60]

Some markets go from less to more competitive as a result of technological change. One good example is the telephone industry, discussed below.[61] Digital computing hardware is another example. During the heyday of mainframe computers, IBM was the acknowledged leader, with dominant market shares that were sufficient to provoke a high profile monopolization case.[62] 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; the U.S. case against IBM was dropped.[63] Rather, it was a consequence of technological changes that IBM itself initiated

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[60] *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 https://www.statista.com/statistics/272307/market-share-forecast-for-smartphone-operating-systems/#:~:text=Smartphones%20running%20the%20Android%20operating,percent%20share%20of%20the%20market.

[61] *See infra* note 92 and accompanying text.

[62] *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).

[63] 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].

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by adopting an open architecture that involved liberal licensing to others.[64]

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.[65] 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.[66] A variation of this structure can also be made to work for unitary platforms such as Amazon.[67] The result can be robust competition while yet 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 are interoperability or pooling of

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[64] *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, 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].

[65] *See List of Optical Disc Manufacturers*, WIKIPEDIA, https://en.wikipedia.org/wiki/List_of_optical_disc_manufacturers [https://perma.cc/TV7S-BKNB].

[66] *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%20final.pdf [https://perma.cc/33JD-TZBN]; ETSI, etsi.org [https://perma.cc/SH4F-754D].

[67] *See* discussion *infra*, text at notes __.

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essential information or data.[68] Android, Apple and other cellular phones interconnect, enabling users to engage in a full range of communications with one another.[69] The major wireless carriers all sell and support both Apple and Android phones interchangeably. Most retailers who are not owned by or have exclusive dealing agreements with a particular brand sell both.[70] In video games, many are sold in multiple formats that can be played by people with different game consoles.[71] 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 personal 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 negative. By contrast, the marginal cost to most people of carrying an additional credit card is close to zero, and different cards provide different benefits or are accepted by different stores. Further, multiple

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[68] On using antitrust to compel interoperability, see *infra* notes 324-331 and accompanying text.

[69] There are a few exceptions. For example, Apple's iMessage functionality is available only on Apple devices, such as iPhones, Macs, and Apple Watches. *See 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.").

[70] *See, e.g.*, *All Smartphones*, VERIZON WIRELESS, https://www.verizon.com/smartphones [https://perma.cc/WL6D-C766] (offering a wide variety of both Apple and Android phones on the same wireless plans).

[71] *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).

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cards enable people to carry more debt or stagger out their payments. That is, the cards function as both complements and substitutes. People might also download apps for both Uber and Lyft, 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 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*—offered with no factual support—that digital platforms and other markets do not compete with one another as a matter of law simply ignored these realities.[72] If taken seriously it could make factual analysis of market power in digital platform markets impossible.

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.[73] Importantly, single homing does not dictate that competition cannot work in a market, but only that competitors must vie with one another to be a particular user's exclusive choice. Single-homing can be sequential, as when someone picks a single technology for one time period, but then

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[72] 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.").

[73] *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 59.

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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 the practice of hardware manufacturers to pay studios for movies to be released exclusively in a single format. Both sides made such payments, but Sony was ultimately more successful in buying exclusivity for its Blu-ray format.[74] Video-game-console makers and others have also used exclusivity agreements to induce single-homing.[75] The payments themselves could be subject to antitrust rules governing exclusive dealing, which condemn anticompetitive agreements that involve the payment of money for exclusive rights.[76] For example, the Government's 2020 antitrust complaint against Google alleges that Google paid Apple large sums to make Google Search the default search engine on iPhones.[77] An alternative equilibrium could be more like the one for cell phones, where customers typically single-home but carriers multi-home, permitting and even providing devices from multiple manufacturers.[78]

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[74] *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*, 85 S. CAL. L. REV. 173, 175-79 (2009).

[75] *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, Superstars in Two-Sided Markets: Exclusives or Not? 3, 8-9 (July 2020) (unpublished manuscript), https://ssrn.com/abstract=3243777 [https://perma.cc/Q5TQ-QVD2] (discussing and providing tables of exclusivity agreements in video games and other platforms).

[76] *See* AREEDA & HOVENKAMP, *supra* note 7, ¶ 1800.

[77] Cplt., United States v. Google, LLC (1:20-cv-03010, D.D.C., Oct. 20, 2020).

[78] For example, Verizon offers 45 Android devices and 20 iPhones from ten different manufacturers. *See* VERIZON WIRELESS, *supra* note 70.

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While widespread availability of multi-homing makes natural-monopoly status less likely, it does 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.[79] Users of desktop computers, laptops, and mobile devices are all able to install multiple free search engines and switch quickly among them. Yet Google retains a dominant market share.[80]

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

There is little empirical support for the proposition that digital-platform markets as a group 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.[81] Others enjoy competition among more evenly sized rivals. One question that is central is the prospects for new entry.

Determining the existence, extent, and relevance of entry barriers in an antitrust case has always been a highly factual inquiry.[82] In per se cases such as price fixing, entry barriers are largely irrelevant. At the other extreme, in cases involving unilateral pricing conduct, they are usually central. 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 can be a powerful entry deterrent. The same thing can be said of accumulation of large amounts of consumer data or large intellectual property

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[79] See United States v. Google, cplt, supra note __, ¶93 (alleging that Google's search market share is around 90%).

[80] *See infra* notes 120-134 and accompanying text.

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

[82] *See* AREEDA & HOVENKAMP, *supra* note 7, ¶¶ 420-423.

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portfolios. Offsetting this, low consumer switching costs and widespread multi-homing, which are common in platform markets, encourage new entry. Product differentiation is also an avenue for new entry, as is high technological turnover.[83] Which of these various characteristics dominates is an empirical question depending on the facts of each situation.

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 pursing if new entry would be sufficiently rapid so as to make anticompetitive effects from the merger unlikely.[84] The evidence must show that new entry would keep prices sufficiently low that consumers would not be significantly harmed by the merger.[85] 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 pre-merger levels would be likely to occur within two years.[86]

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

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[83] *See* Daniel L. Rubinfeld & Michal S. Gal, *Access Barriers to Big Data*, 59 ARIZ. L. REV. 339, 350-367 (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) (arguing that it is difficult to "categorically characterize the competitive effects of big data as either procompetitive or anticompetitive").

[84] U.S. DEP'T 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].

[85] *Id.*

[86] U.S. DEP'T JUST., HORIZONTAL MERGER GUIDELINES (1992), https://www.justice.gov/sites/default/files/atr/legacy/2007/07/11/11250.pdf [https://perma.cc/4W8E-PRGK].

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fault." Writing in 1978, 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.[87]

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 multiform competitive equilibrium. That would lead to costly price wars or collusion because 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*

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[87] *See* 3 PHILLIP AREEDA & DONALD F. TURNER, ANTITRUST LAW ¶¶ 620-623 (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) ("[T]he Sherman Act §2 [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 Consideration*, 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. Zerbe, *The Sherman Act is a No-Fault Monopolization Statute: A Textualist Demonstration*, 70 AM. U. L. REV. (forthcoming 2020); and Marina Lao, *No-Fault Digital Platform Monopolization*, 61 WM. & MARY L. REV. 755 (2020). 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* preserves Areeda and Turner's no-fault monopoly proposal intact, along with my own critique. *See* AREEDA & HOVENKAMP, *supra* note 7, ¶¶ 630-38.

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Co. v. United States, "monopoly would be inevitably prevented if no extraneous or sovereign power imposed it and no right to make unlawful contracts having a monopolistic tendency were permitted."[88]

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.[89] If no exclusionary practices are proven, then the monopolist will be left alone and 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.

We could take different approaches to the problem of long-held monopoly. 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.[90] This was the gist of Judge Wyzanski's famous mid-twentieth-century discussion of Judge Hand's position in the *Alcoa* case.[91] 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.

Our insistence on exclusionary practices rests in part on the fact that often we do not know why a particular market has a dominant firm. Perhaps it naturally gravitates toward natural monopoly or perhaps dominance is a result of exclusionary practices or some

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[88] 221 U.S. 1, 62 (1911).

[89] Union Leader Corp. v. Newspapers of New England, 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.").

[90] *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.").

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

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fortuity that is likely to go away. 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 were displaced by wireless alternatives—a technological development that had nothing to do with antitrust law. The breakup occurred when AT&T employed exclusionary practices in order to maintain its monopoly even after competition had become sustainable.[92]

Historically, most firms eventually lose their dominant status. The federal courts confronted the issue of monopoly duration already in the early history of antitrust in *United States v. American Can Co*. The defendant's market share was already rapidly declining by the time of the decision. 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.[93]

During the Great Depression, the monopoly that captured Congress's attention and prompted the passage of the Robinson-Patman Act[94] was the Great Atlantic & Pacific Tea Company (A&P), a large chain store that put many small grocers out of business. Chain stores famously provoked the wrath of Justice Brandeis.[95] For decades A&P was the largest grocer in the United States.[96] In 1929, it was by far the largest American retailer of any kind, two and a half times larger

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[92] *See infra* note 217 and accompanying text.

[93] *See* United States v. Am. Can Co., 230 F. 859, 879 (1916) ("[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 . . . .").

[94] 15 U.S.C. § 13 (2018).

[95] *See, e.g.*, Louis K. Liggett Co. v. Lee, 288 U.S. 517, 541-80 (1933) (Brandeis, J., dissenting in part); *see also* LAURA PHILLIPS SAWYER, AMERICAN FAIR TRADE: PROPRIETARY CAPITALISM, CORPORATISM, AND THE "NEW COMPETITION," 1890-1940, at 119-35 (2018) (describing Justice Brandeis's views on competition law reform).

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

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than Sears, the second largest.[97] 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.[98]

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 into existence through the acquisition of a patent portfolio that covered plain paper copying, and then gradually lost its position when the patents expired.[99]

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.[100] 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

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[97] *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).

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

[99] Xerox's strategy is recounted 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 SCM Corp. v. Xerox Corp., 645 F.2d 1195, 1197 (2d Cir. 1981) (same). *See also* R. Cross & A. Iqbal, *The Rank Xerox Experience: Benchmarking Ten Years On*, *in* BENCHMARKING—THEORY AND PRACTICE 3 (Asbørn Rolstadås ed., 1995) (describing the difficulties Xerox experienced vis-à-vis its Japanese competitors when its patents expired).

[100] *See* William E. Kovacic, *Designing Antitrust Remedies for Dominant Firm Misconduct*, 31 CONN. L. REV. 1285, 1295 n.46 (1999); Briscoe Cent. for American History, *ExxonMobil Historical Collection, 1790-2014*, U. TEX., 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.").

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after World War II. The winning bidders, Kaiser and Reynolds, emerged as significant competitors.[101] In the prolonged *United Shoe Machinery* litigation, which stretched from the 1910s to the 1960s,[102] the district court initially condemned the defendant of monopolization but refused to break it up, largely because it operated out of a single plant.[103] A decade and a half later, however, the Supreme Court ordered a partial divestiture.[104] In 1949, USM held roughly 90% of the market for shoe-making machinery.[105] Subsequently, the market for stitched leather shoes went into sharp decline, and USM lost more than a third of its market share.[106]

Durable monopolies are sometimes brought to an end by technological change. One of the saddest examples is Kodak, a storied monopolist for nearly a century. First condemned in the 1910s,[107] it was described by the Second Circuit in 1979 as a "titan in its field."[108]

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[101] *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).

[102] *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) (enforcing an exclusive dealing contract as a reasonable restraint).

[103] 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).

[104] United States v. United Shoe Mach. Corp. 391 U.S. 244, 251 (1968).

[105] *See* KAYSEN, *supra* note 103, at 52-53.

[106] *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).

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

[108] Berkey Photo, Inc. v. Eastman Kodak Co., 603 F.2d 263, 271 (2d Cir. 1979).

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For the preceding twenty-seven years its market share in the film market had never been less than 82%.[109] Its share of amateur still cameras ranged from 61% in the 1950s to as high as 90% in the mid-sixties. In 2012, however, it declared bankruptcy, for reasons that had little to do with antitrust law. Rather, the problem was massive technological change and excessive path dependence. 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.[110]

The story of Microsoft and the rise of the consumer internet is vaguely similar, although Microsoft managed to prosper.[111] 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 operating system, Microsoft Windows, resided on each computer and acted as a gateway through which all applications and traffic had to pass.[112] At the same time, however, Microsoft contemplated a model in which processing and data were largely local and communication was merely an add-on.

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[109] *Id*. at 269- 270.

[110] *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).

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

[112] For good analysis, see generally 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).

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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 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."[113] Microsoft then undertook a number of actions intended to suppress Netscape and perpetuate Windows' dominance.

Gates's purpose was to protect the Windows operating system, and monopoly maintenance of Windows was the core of the government's case. But the real threat came from the internet browser. In fact, it was the browser, not the operating system, that subsequently became commoditized. While Microsoft continues to hold a large share of the differentiated operating-system (OS) market, depending on how it is defined, it has largely been relegated to bit player in the browser market.[114] In part that was a result of the *Microsoft* decree, which enjoined several exclusive agreements that favored Internet Explorer over Netscape. In part it resulted from the dramatic rise of broadband and the emergence of high quality, free alternatives, including Mozilla and later Chrome.

Overall, the history of digital platform monopolies is not distinctive from that of other industries. While the dataset is smaller, the evidence suggests that the life of a digital monopoly is no longer than the life of more traditional manufacturing monopolies and is very likely shorter. 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 operating system, where it was dominant.[115] At the time,

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[113] 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.

[114] *See infra* notes **Error! Bookmark not defined.**-126 and accompanying text.

[115] *Microsoft*, 253 F.3d at 117-19.

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Microsoft's Windows operating system had a market share of greater than 95% for Intel-based ("IBM-compatible") computers.[116] 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.[117] 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 as well, giving the two systems a more similar architecture, thus more readily enabling software to run on both.[118] If Apple's operating system is subtracted, Microsoft's market share today would still be about 97%, roughly the same as it was during the litigation. Microsoft's operating-system 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. Indeed, at this writing Apple is once again switching chips, this time to ones that it manufactures itself.[119]

The story for Microsoft's internet browser is very different. Interestingly, the *Microsoft* antitrust litigation was aimed at dominance of the operating-system market, and the government won the most important claims. While these claims involved Windows as a fulcrum, many involved conduct that was intended by Microsoft to give commercial advantages to its web browser, Internet Explorer.

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[116] *Id*. at 51.

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

[118] *See* Press Release, Apple, Inc., 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].

[119]*See* Brian Heater, *Apple is building its Own Processors for Future Macs*, Techcrunch, June 22, 2020, available at https://techcrunch.com/2020/06/22/apple-is-building-its-own-processors-for-future-macs/.

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Microsoft "tied" Windows and Internet Explorer by requiring purchasers of Windows to take the browser as well.[120] A little later it comingled Internet Explorer's code into the Windows operating-system code, where it resides to this day.[121] It also imposed various restrictions on both original-equipment manufacturers (OEMs) and application writers requiring them to favor Internet Explorer or use it exclusively.[122] 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 it at Netscape's expense.[123] 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.[124]

Today, Google Chrome is the clear leader, with some 69% of user market share, followed by Mozilla Firefox.[125] Microsoft has two browsers in play: Edge, its current browser, and Internet Explorer which still runs on older machines. Together they have a small market share, although Edge has recently experienced a surge in popularity. Today Microsoft's two browsers now account for about 15% of

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[120] Herbert Hovenkamp, *IP Ties and* Microsoft's *Rule of Reason*, 47 ANTITRUST BULL. 369, 376 (2002).

[121] *Id*. at 411. In 2015 Microsoft switched to Edge, a browser based on the Chromium engine developed by Google. On the D.C. Circuit's treatment of the technically complex comingling issue, see *Microsoft*, 253 F.3d at 65-68.

[122] 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).

[123] *See id.* at 101-02.

[124] *Microsoft*, 253 F.3d at 82-84.

[125] *Usage Share of Web Browsers*, WIKIPEDIA, https://en.wikipedia.org/wiki/Usage_share_of_web_browsers [https://perma.cc/B8GX-M79R] See also Cplt., United States v. Google, supra note __, ¶49 (alleging that Chrome has a 60% market share).

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browser usage.[126] 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.[127]

So ironically, Microsoft very largely retained its market position in the OS market (where it lost the antitrust litigation), but it has declined sharply 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 very likely, the bigger reasons were the expanding availability of broadband and the rapid expansion of free open source alternatives Chrome and Mozilla, as well as Apple's own entry in 2003 with Safari. The most likely explanation for these shifts in market share is consumer preference. Browsers are free and new ones can be installed in a matter of minutes. They are also readily susceptible to multi-homing, enabling users to have multiple browsers installed on both computers and smartphones.

The story for social networking platforms differs in many respects. MySpace had launched in 2003, and by 2007 writers were expressing concern that MySpace was destined to become a permanent natural monopoly.[128] That literature largely ignored Facebook, which had launched in 2004. By 2008, Facebook had overtaken MySpace in

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[126] *See* https://9to5google.com/2020/11/02/microsoft-edge-market-share-2020-gain/#more-387510 (last visited Nov. 2, 2020).

[127] *See* Techradar Pro, available at https://global.techradar.com/en-za/news/watch-out-chrome-microsoft-edge-just-hit-an-important-landmark#:~:text=The%20latest%20figures%20from%20NetMarketShare,all%20users%20in%20September%202020.

[128] Victor Keegan, *Will MySpace Ever Lose its Monopoly?*, GUARDIAN (Feb. 8, 2007, 7:41 AM EST), https://www.theguardian.com/technology/2007/feb/08/business.comment [https://perma.cc/479P-USX4] (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 network] site of significance" and competitors would be "condemned to niche markets and subsets").

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popularity.[129] Today, Facebook occupies some 75% of a highly differentiated and poorly defined market for social media sites.[130] MySpace is no longer counted among the top ten.[131] At this writing, Facebook is facing increasing competition from TikTok, whose possible partial acquisition by Oracle[132] may give Facebook a serious rival for many of its functions.

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 a 17.7% market share to Google's 7%.[133] In 2003, Yahoo purchased AltaVista

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[129] *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].

[130] *See Social Media Stats Worldwide*, STATCOUNTER, https://gs.statcounter.com/social-media-stats [https://perma.cc/8PSE-VAAM]. Other sites indicate that Facebook has been losing market share as the market for social media websites has become more numerous and diverse. Priit Kallas, *Top 10 Social Networking Sites by Market Share Statistics [2020]*, DREAMGROW (Jan. 2, 2020), https://www.dreamgrow.com/top-10-social-networking-sites-market-share-of-visits [https://perma.cc/J9AK-JVHT].

[131] J. Clement, *U.S. Market Share of Leading Social Media Websites 2020*, STATISTA (June 18, 2020), https://www.statista.com/statistics/265773/market-share-of-the-most-popular-social-media-websites-in-the-us [https://perma.cc/M44F-JQG5]; *see also* Elise Moreau, *Is Myspace Dead?*, LIFEWIRE (Sept. 30, 2020) https://www.lifewire.com/is-myspace-dead-3486012 [https://perma.cc/ZC52-E4FB].

[132] The merger remains speculative at the time of this writing. *See* Georgia Wells & Aaron Tilley, *Oracle Wins Bid for TikTok in U.S., Beating Microsoft*, WALL ST. J. (Sept. 14, 2020, 9:40 AM ET), https://www.wsj.com/articles/microsoft-drops-out-of-bidding-for-tiktoks-u-s-operations-11600039821 [https://perma.cc/89BT-AU85].

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

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and incorporated parts of its technology into its own search engine. AltaVista was shut down as an independent search engine in 2013.[134]

While these data give only a partial picture of a complex history, there does not seem to be any evidence that durability of a dominant position is a more prominent feature of digital platform markets than for markets generally. Even among digital markets, entry and exit continuously occur, shares change, and dominance comes and goes.[135] While large intellectual property (IP) portfolios can make entry more difficult, widespread licensing can actually 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.[136] The one significant threat to this continuous turnover is platform acquisitions of the firms that are most likely to emerge as competitors.[137]

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[134] *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].

[135] 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) (detailing how concentration is neither as bad nor as harmful as predicted); 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) (describing the effect of strategic investments on market structure); Paul A. Geroski & Alexis Jacquemin, *Dominant Firms and their Alleged Decline*, 2 INT'L J. IND. 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 MGM'T REV. 18, 19-20 (2018).

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

[137] *See* discussion *infra* Section III.A.

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3. Declining Costs, Network Effects, and the Extent of the Market

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. This natural monopoly position occurs when a firm's costs decline continuously to the point that sales are at least one half of the market at the competitive price. At that point, this firm would have lower costs than any rival making the same product with the same technology and costs. The usual explanation for this phenomenon is very high fixed costs, coupled with plant capacity to serve the entire market.

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. If it sells that output at the competitive price, which we assume is $1, the market will clear at 1800 units. As a result, any 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.[138] Assuming that the natural monopolist's costs do not start going back up, the *socially* optimal outcome would be for it to satisfy the entire market by producing 1800 units and selling them at $1 per unit. However, as an unregulated monopolist it will maximize its profits, which could occur at a price significantly higher than $1. Thus the case for price regulation of natural monopolies.[139]

Three qualifiers are important. 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 satisfy the entire market. Third, a rival with lower costs might survive and even displace the

[138] *See* HOVENKAMP, FEDERAL ANTITRUST POLICY, *supra* note 23, § 1.4b (6th ed. 2020).

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

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original firm. For now we ignore the possibility of product differentiation, which throws the entire model into disarray.[140]

When a firm charges more than its costs it creates a price umbrella under which rival firms may be able 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 else 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 or the position of rivals, the need for short-run profits, or fear of antitrust litigation. For example, U.S. Steel followed the latter strategy for many years, setting a price that permitted a fringe of firms to operate but limiting their growth.[141]

Second, a firm with continuously declining costs must also be able to meet market demand at its chosen price. The classic situation where this is not true is the passenger airplane flying a designated route. A single plane's per-passenger costs decline as it fills the plane, all the way up to 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.[142] In the latter case we would have competition. Large capacity suggests why many public utilities such as electric companies

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[140] *See infra* notes 162-182 and accompanying text.

[141] 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, 600 (1989).

[142] 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.

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are natural monopolies, at least at retail. Once the line is in place the incremental cost of additional usage is very small, and a single set of lines is usually adequate to take care of 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.

Digital 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 show up, assuming they have the technical capacity to satisfy demand. Physical products such as those sold by Amazon are another matter, and for them there is no reason to think that the capacity problem is significantly different than it is for any seller.

Third, and finally, even a natural monopoly can be displaced by a different technology or 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.[143] The AT&T telephone system was very likely a natural monopoly during the many decades in which all calls were hard wired between the calling parties. The rise of wireless communication and the emergence of firms that took advantage of these technologies, such as MCI and Sprint, changed that. Now most parts of the highly differentiated industry are competitively structured.[144] Newspapers that were thought to be dominant in their service areas had to fight off emergent

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[143] *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, 135-136 (1960) (describing rise of the trucking industry in competition with railroads).

[144] *See infra* notes **Error! Bookmark not defined.**-**Error! Bookmark not defined.** and accompanying text.

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radio stations for advertising revenue,[145] and today they are battling against the internet.[146] In sum, the question whether a market is a natural monopoly is technology dependent—and thus, time dependent. In digital markets in particular, technology can change quickly.

The fact that a platform is digital does not mean that all of its output is digital. At one extreme, platforms such as Facebook, Google Search, Spotify, and Netflix produce digital content almost exclusively. 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, although it retains a small but shrinking portion of its business for the rental of physical DVD or Blu-ray discs.[147]

Amazon, Uber, and Airbnb are all very different. They sell physical products and services, rides, and short-term lodging, respectively. For most of 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 and there can be 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

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[145] *E.g.*, Lorain Journal Co. v. United States, 342 U.S. 143, 143 (1951) (ruling against a newspaper for refusing to deal with anyone who was purchasing advertising on a competing radio station).

[146] *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].

[147] Netflix, Inc., Annual Report (Form 10-K) (Jan. 29, 2020) (showing DVD subscription revenues declining since 2017).

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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.[148] For a product such as a Samsonsite bag, it is not clear that Amazon has a significant advantage over rivals. It is certainly not clear that a monopoly seller will ever emerge, even within this single brand.

Networked technologies such as 4G & 5G cellphones are characterized by very considerable economies of scale, significant intellectual property rights, network infrastructure, and digital elements such as operating systems. But they also experience more conventional economies in the manufacture and distribution of devices. Here, an important factor making natural monopoly less likely is the high degree of interoperability.[149] This is simply a later version of the story of AT&T, where changes in technology facilitated the emergence of competition, but an antitrust consent decree and later federal legislation were needed to further and protect interoperability. Interconnection is virtually seamless for digital phones, even though the Apple iPhone technology is different from the technology used by the numerous Android manufacturers. Indeed, in spite of the need to coordinate many manufacturers, the Android system has grown more

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

[149] On interoperability as a remedy, see *infra* notes 324-331 and accompanying text.

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rapidly than the unitary Apple system and is now dominant in many parts of the world.[150]

Both declining costs on the production side and increasing value on the consumer side can favor larger firms. This is where network effects come in. Network effects occur when customer value increases as volume increases. 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. If a network must be owned by a single firm, the advantage is clearly with larger firms. If the network can be offered jointly by multiple firms, however, that need not be the case.

Standard setting often reflects the force of direct network effects, helping to explain such things as why markets tend to coalesce around a single fuel for automobiles, a single digital format for video discs, and so on.[151] By contrast, low-cost, high-quality interconnection tends to mitigate these effects.[152] 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. If Android and Apple phones were not able to interconnect, making communication

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[150] 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-45fe80d319cf [https://perma.cc/9TDJ-MYV8] (discussing Android's growing market share).

[151] Such markets are sometimes described as experiencing economies in consumption. *See* Richard A. Posner, *Antitrust in the New Economy*, 68 ANTITRUST L.J. 925, 926 (2001).

[152] *See infra* Section II.C.2.b

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between them impossible, the market would very likely move to adoption of one of them or the other.

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 applies to complements that operate on the other side of a two-sided platform.[153] For example, an increasing number of riders on Uber will make it more valuable to drivers, increasing their number as well. As the number of drivers increases, so too the number of riders, because availability increases and wait time decreases. 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.

In a two-sided market, the platform or venue intermediates between the two distinct but interdependent groups of participants in order to yield the optimal mixture of participation and price. In equilibrium this will be the mixture 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 subscription prices. The trick for the publisher is to find not only the right price level for each side, but also to find the correct "participation

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[153] *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, 634 (2004) (comparing direct and indirect network effects).

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level," or balance between subscribers and advertisers.[154] A direct transaction two-sided market such as Uber, where the platform acts as broker or deal maker 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, and most probably are not. If competition is possible between two-sided platforms, then antitrust has a role to play in maintaining it. 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,[155] and perhaps even with other modes of transportation.

A natural monopoly requires not only a plant that is big enough to serve the market, as the airplane example above illustrates,[156] but also a market that is sufficiently limited in the range of competitive choices. For example, AmazonBasics carry-on luggage competes with other luggage manufacturers, such as Samsonite or TravelPro, and these sell at least some of their bags through traditional stores. In its *Amex* decision the Supreme Court incorrectly concluded as a matter of law that "[o]nly other two-sided platforms can compete with a two-sided platform for transactions."[157] That statement represented a

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

[155] *See* Phila. Taxi Ass'n v. Uber Techs., Inc., 886 F.3d 332 (3d Cir. 2018) (antitrust case brought by traditional taxicab association against Uber).

[156] *See supra* notes 141-143 and accompanying text.

[157] 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 on*

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triumph of ideology over science. The question of which firms compete with which other firms is one of market behavior and distinctly a question of fact.[158] Further, as a matter of fact the Court's statement is clearly wrong.

In any event, the Supreme Court's statement about lack of competition between two-sided and more traditional markets was dicta. The only relevant competing entities in *Amex* (Visa, MasterCard, and Discover) were all two-sided platforms.[159] In *Amex*, no one denied that Amex and other two-sided credit card platforms competed with one another. Indeed, there would not have been any point to Amex's anti-steering rule if they did not compete. The rule was intended to forbid merchants from steering the user of a high priced Amex card to a less costly credit card rival.

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,[160] or that cash transactions cannot compete with credit-card transactions—all questions of fact. People switch back and forth between these things all the time.

More technically, we would say that the two compete if one is in a position to force the other's prices down to its cost. That would be the proper question for 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

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other grounds, No. 20-1767, 2020 WL 4915824 (3d Cir. July 20, 2020) (vacating the order as moot after the parties abandoned the transaction).

[158] Herbert Hovenkamp, *The Looming Crisis in Antitrust Economics*, B.U. L. REV. (forthcoming 2021), https://ssrn.com/abstract=3508832 [https://perma.cc/A4CK-BBXA].

[159] *See Amex*, 138 S. Ct. at 2283 (indicating there was no issue of competition between Amex and alternatives such as cash because the anti-steering rule did not apply to them).

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

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higher than its costs.[161] In setting its price Uber must consider not only demand and participation balancing between its own drivers and riders, but also competition with Lyft, as well as with conventional taxicab companies. Further, all participants 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.[162] This makes the competition question intensely factual, and with the likelihood of different outcomes for different situations.

Finally, it is no answer that in a long run equilibrium only the platform will dominate. It may or may not be the case that eventually Uber and Lyft will drive traditional taxis out of the market. More 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.[163] In all cases, however, the question whether a particular two-sided platform competes with a more traditional market is one of fact, not of law.

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 interplatform competition is product differentiation. While a natural monopoly can exclude a rival with an identical product simply by charging a competitive price, the differentiated entrant faces a different demand

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[161] *See* AREEDA & HOVENKAMP, *supra* note 7, ¶¶ 530-31, 536-38.

[162] *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).

[163] *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, 372-372 (1998) (speaking of "intermediate run").

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curve. As a result, there can be room for new entry even against a much larger firm.

The inroads into monopoly typically come from entrants whose product is different from that of the incumbent. For example, the railroads encountered significant competition from trucking,[164] and AT&T's competition for its traditional land lines came from wireless technology.[165] Facebook displaced MySpace, not by simply going head-to-head with a substantially identical product, but rather by offering a set of intermember communication services that MySpace lacked.[166]

Consider 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 (say, men seeking women) as the number of a complementary set of participants (women seeking men) is larger; or vice versa. That logic would lead to the conclusion 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, and vice versa, until the full population of dating site users was exhausted.

So why don't we have a single dating site that collects all participants into one place? One possibility of course is that the market for dating sites has not yet reached an equilibrium and eventually this will happen. However, online dating platforms have been around for some twenty-five years and their number and revenues are still growing.[167]

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[164] *See supra* note 143 and accompanying text.

[165] *See supra* note 136 and accompanying text.

[166] *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-facebook-beat-myspace [https://perma.cc/HY9C-9ZMA].

[167] *See Timeline of Online Dating Services*, WIKIPEDIA, https://en.wikipedia.org/wiki/Timeline_of_online_dating_services

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The dating industry has also been subject to a fair amount of consolidation, mainly by merger. Today it is best described as having a dominant firm aggregating several sites (Match Group) with a competitive fringe.[168] Significantly, when a large firm such as Match acquires sites such as Tinder or OKCupid it does not blend them all into the same site but maintains them with separate identities and membership. That also 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.[169]

Product differentiation in dating sites results mainly from reduced search costs in a world of diverse user preferences. Dating sites range from the fairly staid and traditional, such as Match.com; to the much more risqué, such as AdultFriendFinder.com; to more focused sites such as Grindr for gays and lesbians, OurTime for older adults, J-Date for Jewish people, Christian Mingle for Christian evangelicals, Shaadi for Indians, EliteSingles for people with higher

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[https://perma.cc/57EV-56BG] (noting that Kiss.com, founded in 1994, was a digital predecessor to Match.com, which was launched in 1995). Since that time the industry has grown steadily. As of May 2020, there were 2394 firms, some of whom owned multiple sites, and continuing growth. *See* John Madigan, *Dating Services Industry in the US*, IBISWORLD (May 2020), https://my.ibisworld.com/us/en/industry/81299a/industry-at-a-glance [https://perma.cc/4J3X-8SNX].

[168] Match Group owns Match, Tinder; they merged in 2017. As for OKCupid, Match Group acquired it in 2011 and Hinge in 2019. It has acquired many other smaller sites and was estimated in 2019 to have a total market share of 66% across its assets. eHarmony, which also owns some smaller sites, has a market share of 10.8%. No other firm exceeds an 8% market share. *See* Evan Michael Gilbert, *Antitrust and Commitment Issues: Monopolization of the Dating App Industry*, 94 N.Y.U. L. REV. 862, 876 tbl.2 (2019).

[169] *See* R. H. Coase, *The Nature of the Firm*, 4 ECONOMICA 386, 396-98 (1937).

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education levels, PURRsonals for cat lovers, Hotsaucepassions for lovers of spicy food, and many more. As long as this product differentiation is both durable and desired, dating sites will not be winner-take-all platforms.

The same thing 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 both hardware formats and in the games themselves[170] In addition, many periodicals that depend on 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 size, *Teen Vogue* (#74 nationally by circulation) and *Field & Stream* (#73 nationally) are unlikely to merge into one. Nor is one likely to drive the other out of existence and become dominant.[171] Even if the two came to be owned by the same parent, it is unlikely that the owner would blend the two into one. They appeal to very different audiences. This is why any

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[170] 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. SYS. RES. 461 (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 (2005); Myriam Davidovici-Nora & Marc Bourreau, *Two-Sided Markets in the Video Game Industry*, 173-174 RÉSEAUX 97 (2012); Venkatesh Shankar & Barry L. Bayus, *Network Effects and Competition: An Empirical Analysis of the Home Video Game Industry*, 24 STRATEGIC MGMT. J. 375 (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 (2017); and Thomas Teeter & Ryan Lunsford, Electronic Arts: Strategic Differentiation in the Global Video Gaming Industry (Aug. 20, 2019) (unpublished manuscript), https://ssrn.com/abstract=3459606 [https://perma.cc/WL7H-H2VG].

[171] *See List of Magazines by Circulation: United States*, WIKIPEDIA, https://en.wikipedia.org/wiki/List_of_magazines_by_circulation#United_States [https://perma.cc/3RKZ-AVW8].

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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, which is characteristic of natural monopolies.[172] 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.[173]

For a few products, such as internet search engines, product differentiation has been less successful, and natural monopoly becomes a more realistic possibility. There are in fact differences among search engines in page formats, the way results are displayed, the amount and nature of the information that they preserve, and the algorithms used to produce search results. None of these differences has significantly balanced out the competition, even though multi-homing is readily possible and common. Worldwide search data from 2020 shows Google with a market share in the neighborhood of 92%, Bing (Microsoft) with 2.8%, and no one else with greater than 2%.[174]

What accounts for these lopsided numbers in the search engine market is not entirely clear. Decisions such as the European Union

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[172] *See* discussion *supra*, text at notes __.

[173] 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 NYU L. REV. 212, 237-238 (2008).

[174] *See Search Engine Market Share Worldwide*, STATCOUNTER (Sept., 2020), https://gs.statcounter.com/search-engine-market-share [https://perma.cc/EL2C-9RMG]. The share in the United States is a bit lower—about 88%. *See Search Engine Market Share in 2020*, OBERLO, https://www.oberlo.com/statistics/search-engine-market-share [https://perma.cc/6XDV-Y7EH].

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(EU) case against Google Search were based on the premise that Google biases search results to favor paid supporters or else its own assets, such as YouTube.[175] While search biases might increase Google's *revenue*, however, 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 possibility 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.[176] Further, it pays Apple billions of dollars annually in order to be the default search engine on the iPhone – a practice that is currently challenged in the government's antitrust complaint.[177]

These "ties" are only defaults, however. To the extent searchers are disappointed by search bias they can almost always switch to a different search engine.[178] 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,

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[175] *See Commission Decision of June 27, 2017*, EUROPEAN COMMISSION, https://ec.europa.eu/competition/antitrust/cases/dec_docs/39740/39740_14996_3.pdf [https://perma.cc/C8ZY-6VZX].

[176] *See infra* notes **Error! Bookmark not defined.**-**Error! Bookmark not defined.** and accompanying text.

[177] Cplt, United States v. Google, *supra* note __, ¶¶45 119 (alleging that Google pays Apple "billions" of dollars each year for this).

[178] Other possibilities are explored in Fiona M. Scott Morton & David C. Dinielli, *Roadmap for a Digital Advertising Monopolization Case Against Google*, OMIDYAR NETWORK (May 17, 2020), https://omidyar.com/wp-content/uploads/2020/09/Roadmap-for-a-Case-Against-Google.pdf [https://perma.cc/Y9QN-5L28].

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economies of scale show up in higher quality results.[179] If that case is made, Google Search might turn out to be a natural monopoly, but one that data pooling might fix.[180]

What still needs to be answered is whether Google Search's dominance results from design choices that others could duplicate, or whether it results from advantages that accrue to its larger size. In any event, if Google Search is a natural monopoly then a court order divesting Google Search would not break it down; it would simply assign the monopoly to a different owner. Pulling the other way, however, is the fact of Google's large payment to Apple to be the iPhone default search engine. If Google Search were in fact a natural monopoly, such a payment would be unnecessary. More likely, Google Search is not a natural monopoly and the payment should be treated as an exclusionary practice.

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.[181] Most of these acquisitions are not purely horizontal but rather fall into the category of "product extension" mergers,[182] or 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 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

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[179] *See* 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 Cplt, United States v. Google, supra note __, ¶¶35-38.

[180] *See infra* notes 338-339 and accompanying text.

[181] *See infra* notes 355-359 and accompanying text.

[182] *See* AREEDA & HOVENKAMP, *supra* note 7, ¶¶ 1131b, 1144d (discussing product extension mergers); *see also* C. Scott Hemphill & Tim Wu, *Nascent Competitors*, 168 UNIV. PA. L. REV. (forthcoming 2020) , https://ssrn.com/abstract=3624058 [https://perma.cc/2VFL-VBJR] (discussing the importance of protecting nascent competitors).

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to maintain their positions by buying up all of the prospective challengers before they can ripen into more formidable rivals.

II. ANTITRUST REMEDIES AGAINST DOMINANT PLATFORMS

A. Against Platform Exceptionalism

In *Amex*, the Supreme Court disregarded the most basic of all properties of markets, which is that they consist of close substitutes.[183] Instead, it lumped production complements into the same market. In the process it made coherent economic analysis of the problem impossible.

Second, it 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. This dicta has already produced mischief in lower-court decisions. 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.[184]

Third, without argument or evidence, the Court required litigants to show market power indirectly in vertical restraints cases by

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[183] *See* Hovenkamp, *supra* note 158, at 14-15.

[184] 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, 2019), available at https://www.nera.com/content/dam/nera/publications/2019/PUB_SabreFarelogix%20platforms.pdf.

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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.[185] This was another confusion between fact and law.

Fourth, the Court completely butchered the economics of free riding by 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.[186] Amex's anti-steering rule produced immediate losses for *both* the affected cardholder and the affected merchant. The only beneficiary was the operator of a platform able to shelter itself from competition that would have benefitted both cardholders and merchants.

Markets differ from one another.[187] This is why we apply mainly antitrust law to some, 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 that have not been made subject to adequate fact finding. Within this 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

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[185] *See* discussion *supra*, text at notes __.

[186] *See* Hovenkamp, *Platform Antitrust*, *supra* note 154, at 745-47.

[187] *See* Herbert Hovenkamp, *Regulation and the Marginalist Revolution*, 71 FLA. L. REV. 455, 492-95 (2019).

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happen when a court is so overwhelmed by a market's idiosyncrasies that it abandons well-established rules for analyzing markets.

Most digital platforms are not structural winner-take-all markets. In most cases dominant platforms cannot maintain a dominant 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 them is weak, at least if the goal of regulation is the ordinary neoclassical one of approximating competitive rates of output.[188] Empirically, of course, the purposes of regulation are much broader and more diverse than the range of rationales for antitrust.[189] 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 both 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. Under the antitrust laws, a properly defined exclusionary practice is one that unreasonably creates or maintains monopoly status. The courts often speak of

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

[189] *See* BREYER, supra note 51, at 15-25 (1982).

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"monopoly maintenance" as the offense.[190] If such a practice succeeds, it will serve to prolong the duration of the monopoly in fending off market forces that might otherwise operate to weaken or destroy it.[191]

B. Anticompetitive Conduct

This very brief discussion is not intended to make a case for antitrust enforcement against any particular platform.[192] Setting aside mergers,[193] the conduct most likely to provoke a complaint is vertical contracting, such as exclusive or quasi-exclusive dealing, most-favored-nation clauses,[194] or loyalty practices.[195] Also likely are challenges to tying, such as deals that link usage on two or more different products or platforms, including default rules.[196]

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[190] United States v. Grinnell Corp., 384 U.S. 563, 571 (1966) (requiring "willful acquisition or maintenance" of monopoly power for liability); *see also* Comcast Corp. v. Behrend, 569 U.S. 27, 43 (2013) (same); Christianson v. Colt Indus. Operating Corp., 486 U.S. 800, 811 (1988) (same); McWane, Inc. v. Fed. Trade Comm'n, 783 F.3d 814, 832 (11th Cir. 2015) (recognizing liability for exclusive dealing as a monopoly maintenance offense). As of October 11, 2020, Westlaw identifies 1411 judicial decisions that employ the "willful acquisition or maintenance" formulation.

[191] AREEDA & HOVENKAMP, supra note 7, ¶ 501 (noting the importance of durability).

[192] 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%20Facebook.pdf [https://perma.cc/3V2N-CCGS]; and Scott Morton & Dinielli, *Roadmap for a Digital Advertising Monopolization Case Against Google*, supra note 178, at 13, 15. For more general coverage, see AREEDA & HOVENKAMP, *supra* note 7, *passim*.

[193] *See infra* Part III (discussing platform acquisitions).

[194] *See* AREEDA & HOVENKAMP, *supra* note 7, ¶¶ 768a, 1807b.

[195] *Id.*, ¶¶ 749, 1821a.

[196] *Id.*, ¶¶ 1700-83.

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Anticompetitive horizontal agreements are possible but less likely.[197] For example, Apple and Amazon might fix the price of digital books, which they both sell. Uber has been fighting off claims of driver price fixing.[198] Or Facebook and Google's YouTube might divide the market for posted videos. But these highly visible companies are less likely to try these obviously illegal agreements. More likely, two or more of the platforms might participate in a joint venture or standard-setting organization that may also involve claims of anticompetitive conduct. They might also agree anticompetitively not to hire one another's employees.[199]

Both unilateral exclusionary conduct and vertical agreements are market-power offenses addressed under the rule of reason, with one idiosyncratic exception for tying arrangements.[200] As a result, per se violations are less likely. Unfortunately, the federal courts have made the rule of reason unnecessarily harsh on plaintiffs by requiring too much as part of the prima facie case.[201] In large part, this results from a lingering anti-enforcement bias held by the judiciary even though this normative baseline no longer reflects the economic consensus.[202]

Finally, networking that requires cooperative product development and distribution both heightens the costs of

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[197] Google's payment to Apple to make Google Search the iPhone default (see note __, *supra*) could be characterized as horizontal if interpreted as involving Apple's commitment to refrain from developing or acquiring its own search engine. It could also be characterized as a vertical license. Some speculate that Apple may be about to launch or acquire a search engine of its own. See https://appleinsider.com/articles/20/08/27/apple-may-launch-its-own-web-based-search-engine (last visited Oct. 25, 2020).

[198] *See, e.g.*, Meyer v. Kalanick, 2020 WL 4482095, at *2-4 (S.D.N.Y. 2020 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); The 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).

[199] *E.g.*, California v. eBay, 2014 WL 4273888 (N.D.Cal. Aug. 29, 2014) (labor anti-poaching agreement between eBay and Intuit).

[200] *See* AREEDA & HOVENKAMP, *supra* note 7, ¶ 1720.

[201] *See* HOVENKAMP, FEDERAL ANTITRUST POLICY, *supra* note 23, § 2.2c.

[202] *See* Hovenkamp & Scott Morton, *supra* note 4, at 8.

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anticompetitive behavior and increases the opportunities for engaging in it.[203] For example, refusals to deal are inherently more problematic in networked industries where cooperation produces value than in standalone markets where each firm ordinarily supplies its own inputs and finds it own sales. 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.[204]

To be sure, breach of a FRAND obligation is not itself an antitrust violation. But antitrust takes markets as it finds them. 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.[205] 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.[206]

C. Designing Appropriate Antitrust Remedies

The equitable relief provisions of the antitrust laws are extremely broad, with no explicit restriction on the nature of the relief. Indeed, the statute authorizing the government to seek equitable relief does even contain the common limitation that the relief be "in

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[203] *See* Herbert Hovenkamp, *FRAND and Antitrust*, __ CORN. L. REV. __ (2020). *See also* 3B PHILLIP E. AREEDA & HERBERT HOVENKAMP, ANTITRUST LAW ¶772 (4th ed. 2016) (advocating heightened dealing obligations in network industries).
[204] Fed. Trade Comm'n v. Qualcomm, Inc., 969 F.3d 974 (9th Cir. 2020).
[205] Chicago Board of Trade v. United States, 246 U.S. 231, 239 (1918) (explaining functions of the challenged pricing rule).
[206] NCAA v. Board of Regents of Univ. of Okla., 468 U.S. 85, 103-105 (1984) (explaining how NCAA restriction on televised games was unnecessary for proper operation of NCAA football and was a naked restraint).

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accordance with the principles of equity…."[207] A simple injunction, a radical breakup of a large firm into small pieces, or many other kinds of relief are all *legally* possible. Nevertheless, there are limits. Numerous times the Supreme Court has stated that the purpose of an equitable antitrust remedy is to "restore competitive conditions.[208] Broad as the equity statute is, it should not be interpreted as justifying every conceivable remedy. Once a violation is found, however, a remedy is appropriate even though it may "curtail the exercise of liberties that the [defendant] might otherwise enjoy."[209]

Antitrust remedies against monopoly are appropriate when consumer and other benefits from antitrust enforcement exceed the social costs of the monopoly. One important ingredient in that determination is duration and harm caused by the monopoly. Another is the costs and benefits of the remedy itself.

The more durable the monopoly, the more costly to society. Most single-firm monopolies that last only a year are probably not worth pursuing for purposes of obtaining structural relief, because the cost of antitrust enforcement is high and its wheels turn slowly. As a result, antitrust challenges to firm dominance require a showing of entry barriers, which assesses whether monopoly is likely to be dissipated by new entry and, if so, how long that process will take.[210]

A well designed breakup can increase competition, perhaps significantly, as in the *AT*&T case.[211] A bad one can deprive firms of scale economies, harming consumers, or can even ruin a firm. If the

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[207] 15 U.S.C. §25 (authorizing the government "to prevent and restrain" antitrust violations) Cf. the provision for private equitable relief, 15 U.S.C. §26, which authorizes equitable 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….").

[208] United States v. Int'l Harverster 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"). *See also* United States v. Microsoft Corp., 253 F.3d 34, 47 (D.C.Cir. 2001) (describing government's request for "relief as is necessary and appropriate to restore competition conditions").

[209] Nat'l Soc'y of Professional Eng'r v. United States, 435 U.S. 679, 679 (1978).

[210] *See* AREEDA & HOVENKAMP, *supra* note 7, ¶¶ 420-23.

[211] *See* discussion *supra*, text at notes __.

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contemplated remedy is a breakup, the court should insist on additional evidence about effectiveness and costs. The D.C. Circuit in *Microsoft* vacated the district court's remedy judgment because of its failure to hold a hearing.[212] The social cost of a bad breakup is almost certainly much greater than the social cost of an unnecessary prohibitory injunction.[213]

In any event, an essential limitation is that the goal of an antitrust remedy is restoration of competition. It 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.

At the same time, the purpose of an antitrust decree is not to turn markets into regulated industries. 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.

This Section 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. *Breakups for Sherman Act Violations*

[212] *See* United States v. Microsoft Corp., 253 F.3d 34, 106-107 (D. C. Cir. 2001).
[213] *See* AREEDA & HOVENKAMP, *supra* note __, ¶303c.

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Most antitrust relief outside of merger enforcement 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. That proposition would seem to be obvious. 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.[214] In fact, however, each and every transaction affected by the anti-steering rule resulted in both a higher price for the affected consumer and reduced profit for the affected merchant.[215]

For most antitrust problems that do not involve acquisitions, structural breakup is not a promising way to remedy anticompetitive behavior. The history of deconcentration measures in American monopolization cases is not pretty.[216] 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.

One notable exception is the successful AT&T breakup, which resulted from a 1982 antitrust consent decree.[217] The AT&T network

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[214] 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); *id.* at 2292 (Breyer, J., dissenting) (arguing there was not record evidence of higher prices overall).

[215] *See* Hovenkamp, *Platform Antitrust*, *supra* note 154, at 741-42.

[216] *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.").

[217] United States v. Am. Tel. & Tel. Co., 552 F. Supp. 131, 142 & n.42 (D.D.C. 1982), *aff'd sub nom.* Maryland v. United States, 460 U.S. 1001

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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 of instruments were divested and turned over to competition. 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 firms, which are often 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 operating system, another for application services such as Gmail, 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

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(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) (also providing early commentary on the role of antitrust). For a lively but less technical account, see generally 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 generally RICHARD R. JOHN, NETWORK NATION: INVENTING AMERICAN TELECOMMUNICATIONS (2010).

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business and half of its blender business, spinning them off to other firms. This 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 divesture that actually increases competition would require dismantling or restructuring the plants themselves.

Breaking up any platform subject to significant scale economies would be socially costly. It would force inefficiencies on all post-breakup constituents as well as cause consumer harm. For example, Amazon has roughly 67% of the market for e-books.[218] We might divest Amazon's e-book 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 (e-book), or audio. Forcing a divestiture of Kindle would require a customer who wanted the e-book version to go to a different firm's website. E-books 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. That is not likely to be a consumer-welfare improvement.

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 without depriving anyone of scale economies.[219]

b. Addressing Defaults

Another possible nonstructural remedy is removal of defaults, which are presumptive product choices that a user can change. As the Government's 2020 antitrust complaint against Google notes, Google Search is the default search engine on both iPhones and Android

[218] https://about.ebooks.com/ebook-industry-news-feed/ (last visited Oct 26, 2020).

[219] *See* discussion *infra* Section II.C.2.b.

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phones sold in the United States.[220] To be sure, the user can readily and at no cost switch away from the default and install any one of several alternatives. 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.[221] The Government's antitrust complaint against Google alleges that defaults on mobile devices are "especially sticky."[222] 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. While Windows enjoys about 35% of the global operating system (OS) market (across all devices and operating systems), its preinstalled search engine Bing has

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[220] Cplt., United States v. Google, supra note __, ¶¶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); 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].

[221] 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 generally* 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 IN HUM. BEHAV. 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—specifically, "users choose the defaults or alternatives proximal to them").

[222] Cplt., United States v. Google, *supra* note __, ¶3.

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a less than 3% market share.[223] So as many as 90% of those who acquire a Windows 10 device reject the default search engine in favor of Google Search.

United States antitrust law respecting defaults is very conservative. The closest analogue 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.[224] The Supreme Court has described ties with terms such as "forcing" or "coercion."[225]

On this issue, the antitrust statutes are partially helpful. Section 3 of the Clayton Act appears to avoid condemning defaults. It requires a "condition, agreement, or understanding" that the buyer not deal with a rival.[226] The language of the Sherman Act does not assess this conditioning requirement. Section 1 reaches conduct that "restrain[s] . . .trade,"[227] which refers to reduced output and higher prices. Section 2 prohibits those who "monopolize," which requires unreasonable exclusion but does not specify the mechanisms.[228]

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[223] *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 & n.114-16, 437 & n.117-18 (2016) (reporting data from *Tech Times*, *ZD Net*, and *Computerworld*) [hereinafter Hovenkamp, *Antitrust and Information Technologies*].

[224] It's My Party, Inc. v. Live Nation, Inc., 811 F.3d 676, 685 (4th Cir. 2016) (concert promoter did not tie its venue to its promotion services; artists were not forced to use the venue and only 14% of those who used the defendant's promotion services also rented its venue); *see also* AREEDA & HOVENKAMP, *supra* note 7, ¶ 1752 (discussing the requirement of coercion, or conditioning).

[225] *E.g.*, Jefferson Parish 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]").

[226] Clayton Act, 15 U.S.C. § 14 (2018) (codifying section 3).

[227] Sherman Act, 15 U.S.C. § 1 (2018) (codifying section 1).

[228] *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.").

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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.[229] 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. Platform Segregation

Another proposal, which received some discussion during the 2020 presidential campaign, is an injunction prohibiting Amazon "from owning both the platform utility and any participants on that platform."[230] Amazon would either have to transfer its in-house products, such as its AmazonBasics brand, to a different website or else stop selling them. Underlying the proposal is the argument that Amazon sometimes copies third-party products that it is selling and develops its own in-house versions, which it typically sells at lower prices.[231] One specific example is a laptop stand that Amazon sold for a small third-party seller, Rain Design, at a price of around $40.[232] Amazon subsequently designed its own competing stand, which it sold

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[229] *See* AREEDA & HOVENKAMP, supra note 7, ¶ 777.

[230] Elizabeth Warren, *Here's How We Can Break up Big Tech*, MEDIUM (Mar. 8, 2019), https://medium.com/@teamwarren/heres-how-we-can-break-up-big-tech-9ad9e0da324c [https://perma.cc/WP5N-F6YP].

[231] *See* Spencer Soper, *Got a Hot Seller on Amazon? Prepare for E-Tailer to Make One Too*, BLOOMBERG (Apr. 20, 2016, 7:00 AM EDT), https://www.bloomberg.com/news/articles/2016-04-20/got-a-hot-seller-on-amazon-prepare-for-e-tailer-to-make-one-too [https://perma.cc/W577-JA88].

[232] *See Rain Design 10032 mStand Laptop Stand, Silver (Patented)*, AMAZON, https://www.amazon.com/Rain-Design-mStand-Laptop-Patented/dp/B000OOYECC [https://perma.cc/J2MX-TEJ5].

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for about half that price.[233] Variations of this proposal could conceivably be applied to any platform that provided both its own products and those of rivals in competition with one another.

Both the problem and the antitrust remedy raise troublesome issues. Even if the rival laptop stand had been sold on someone else's website, Amazon or some other seller could still copy it. The story indicates that the Rain Design stand was not effectively protected by intellectual property rights. Otherwise Amazon would have been guilty of infringement. Further, the margins on the Rain Design product were so high that Amazon was able to make and sell a similar product at half the price.[234] In fact, a large number of sellers sell competing stands on Amazon, mostly at prices lower than Rain Design's.[235] This particular antitrust remedy appears to be a naked preference for a smaller vendor's wish for high margins over consumers' desires for lower prices and increased variety that competition would offer.

The biggest impact of Amazon's own product sales in competition with third-party sellers is not on niche products such as laptop stands. Rather, Amazon has developed house brands that compete with large manufacturers' well-established consumer labels that sell at high margins. For example, AmazonBasics batteries compete with Duracell (owned by Berkshire Hathaway), Energizer, and Ray-O-Vac. Its AmazonBasics small appliances compete with those produced by Black & Decker, its AmazonBasics office supplies compete with 3M, and its AmazonBasics travel luggage competes with Samsonite.[236] These are all very large firms. The only real accomplishment of own-product separation would be to segregate

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[233] *See AmazonBasics Laptop Desk Stand for PC and Macbook—Silver*, AMAZON, https://www.amazon.com/AmazonBasics-DSN-01750-SL-Laptop-Stand-Silver/dp/B00WRDS0AU [https://perma.cc/8LFX-8P9J].

[234] Alternatively, Rain Design could have extremely high costs.

[235] One Amazon search for "laptop stand" revealed more than two thousand stands of various designs. *See 1-48 of over 2,000 results for "Laptop Stand*,*"* AMAZON, https://www.amazon.com/s?k="laptop+stand" [https://perma.cc/46V7-6JX9] (last accessed Oct. 22, 2020).

[236] Hovenkamp, *supra* note 158, at 61.

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aggressively priced, low-margin house brands from high-margin premium brands. Customers would end up paying more. The underlying problem is no different than the one that has caused many larger retailers such as grocers to offer house brands, sold in the same stores but at lower margins than the premium brands charge.[237]

A related danger is that the owner of a monopoly asset might bundle it with other assets in order to leverage sales. This was a well-understood problem in patent law even before the antitrust laws were passed. Cases concerning patent owners' attempts to bundle their patented products with complements stretch back to the nineteenth century. The courts commonly addressed this problem simply by refusing to permit the patentee to tie, under a variety of doctrines.[238]

d. The Comparative Advantage of Injunctions

While not every antitrust injunction furthers antitrust goals, they are more narrowly focused than divestiture and the results are typically easier to predict. By contrast, 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 divestiture should be compelled without a relatively clear understanding of the likely effects. As with all antitrust remedies, the goal should be to increase post-relief output. Higher output will benefit consumers as well as labor and suppliers. Too often,

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[237] *See* NIRMALYA KUMAR & JAN-BENEDICT E.M. STEENKAMP, PRIVATE LABEL STRATEGY: HOW TO MEET THE STORE BRAND CHALLENGE 14-15 (2007).

[238] *See, e.g.*, Herbert Hovenkamp, Antitrust and the Design of Production, 103 Cornell L. Rev. 1155, 1176-1180 (2018) (tracing the law of patent tying back to the mid-nineteenth century). See, e.g., Wilson v. Simpson, 50 U.S. 109 (1850) (refusing to enforce requirement of seller of patented wood planning machine that purchasers use its cutting knives); Morgan Envelope Co. v. Albany Perforated Wrapping Paper co., 152 U.S. 425 (1894) (refusing to require purchaser of patentee's toilet paper dispenser to use its toilet paper); Aiken v. Manchester Print Works, 1 F.Cas. 245 (D.N.H. 1864) (patentee of mechanical knitting machine could not require purchasers to use its knitting needles).

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well-intended divestitures or structural separations end up doing precisely the opposite.[239]

A properly designed injunction can have more predictable effects and sometimes can accomplish more than divestiture would. 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.[240] This was the result of the EU's July 2018 *Android* decision.[241] Under that remedy, upon initial startup of a new device the Android 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

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[239] *See* Robert W. Crandall, *The Failure of Structural Remedies in Sherman Act Monopolization Cases*, 80 OR. L. REV. 109, 197 (2001) (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's assets). Soon after the price of gasoline rose increase, although whether the increase was caused by the breakup has not been established. See FED TRADE COMM'N, REPORT ON THE PRICE OF GASOLINE IN 1915, at 1 (1917).

[240] The proposal was made in Hovenkamp, *Antitrust and Information Technologies*, *supra* note 223, at 436-37.

[241] *See* Case AT.40099, Google Android, C(2018) 4761, at 274, 314 (July 18, 2018), https://ec.europa.eu/competition/elojade/isef/case_details.cfm?proc_code=1_40099 [https://perma.cc/2DNH-BYK6]. In particular, see *id.* ¶ 1214, at 274, which notes that pre-installation of competing search engines would have created more competition in search traffic and which includes testimony that installing a single search engine as a default increased that search engine's traffic by a factor of two to three. In addition, Google was willing to pay large sums to be the default search engine on some devices). *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/WK82-HVE7].

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page on this process shows a screen giving new users a choice among four search engines: Yahoo, DuckDuckGo, Google, and Bing.[242]

A divestiture in this case may not guarantee the desired result but only structural separation of the components. 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 well[243] -- mainly because Google pays heavily for that privilege, as the Government's antitrust complaint against Google alleges.[244] The practice of making such payments could also be enjoined. In contrast to divestiture, the injunctive remedy can confront the practice directly and give the default choice to consumers.[245]

Divestiture is a blunt instrument. A firm or subsidiary is economically a bundle of contracts operating under state-imposed structural rules of corporate law.[246] 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 few contracts in the bundle might be harmful. As the EU remedy in the Android/search case suggests, one can accomplish the segregation of the operating system and search in more focused ways. The injunction solution addresses the competitive problem at hand in a more focused way.

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[242] *See About the Choice Screen*, ANDROID, https://www.android.com/choicescreen [https://perma.cc/YW42-KUC5].

[243] *See* Pinar Akman, *A Preliminary Assessment of the European Commission's* Google Android *Decision*, COMPETITION POL'Y INT'L ANTITRUST CHRON. (Dec. 2018), https://ssrn.com/abstract=3310223 [https://perma.cc/T7AM-499F].

[244] See Cplt., United States v. Google, supra note __, ¶119. In addition, Google paid Mozilla $1 billion in 2011 to be the default search engine on Firefox. *See* Daniel A. Hanley, *A Topology of Multisided Digital Platforms*, 19 CONN. PUB. INT. L.J. 271, 298-99 (2020).

[245] See discussion infra, text at notes __.

[246] *See, e.g.*, OLIVER E. WILLIAMSON, THE ECONOMIC INSTITUTIONS OF CAPITALISM: FIRMS, MARKETS, RELATIONAL CONTRACTING 17 (1985); 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).

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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.[247] 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.[248] But a breakup of the NCAA would also have brought to an end all of the good things—like organizing the market for intercollegiate 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. Post-decree, the number of annually televised games immediately more than doubled, from 89 to more than 200.[249]

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

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[247] Nat'l Collegiate Athletic Ass'n v. Bd. of Regents of the Univ. of Okla., 468 U.S. 85, 88-90 (1984).

[248] United States v. Trans-Missouri Freight Ass'n., 166 U.S. 290, 308, 343 (1897) (granting 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, FEDERAL ANTITRUST POLICY, *supra* note 23, § 5.2(a)(1).

[249] *See College Football on Television*, WIKIPEDIA, https://en.wikipedia.org/wiki/College_football_on_television [https://perma.cc/8P3K-BA4H]. For more detail about the decree's effects 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).

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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 is to design remedies that will permit the market rather than continued judicial supervision to determine post-relief competition. In a case such as *NCAA*, 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 simple injunction should be sufficient to let competition do its work. 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 post-injunction market, as it did in *NCAA*.

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 compelling dealing. However, it would then have to determine the scope and terms of any forced dealing and almost certainly be called on later when disputes arose.[250] 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, LLC*, in part because dealing orders were already being enforced by regulatory agencies acting under the Telecommunications Act.[251] Similarly, in cases involving violations of prior commitments to license patents out on fair, reasonable, and nondiscriminatory (FRAND) terms, district courts either make these

[250] *See* AREEDA & HOVENKAMP, *supra* note 7, ¶ 771b (developing these objections to essential-facilities claims).

[251] 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).

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determinations or, in some cases, the FRAND agreement specifies arbitration procedures to resolve disputes.[252]

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.[253] Qualcomm, a dominant firm, had reneged on its FRAND obligations in numerous ways that also seemed to be clear antitrust violations, rejecting a well-supported district court's conclusions.[254] Until now, the private FRAND contract enforcement system had proven incapable of restraining such conduct.[255] Wisely, the FTC did not seek to break up the FRAND collaborative system, but only 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 network licensing system contemplates will fall apart. If that happens, Congress will have to step in.

2. More Creative Alternatives

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[252] *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 court's making such a determination); HTC Corp. v. Telefonaktiebolaget LM Ericsson, 2018 WL 5831289, at *11-12 (E.D. Tex. Nov. 7, 2018) (submitting to arbitration a FRAND royalty dispute); *see generally* Herbert Hovenkamp, *FRAND and Antitrust*, 105 CORNELL L. REV. (forthcoming 2020), https://ssrn.com/abstract=3420925 [https://perma.cc/358L-9RXS] (discussing the intersection between FRAND commitments and antitrust).

[253] Fed. Trade Comm'n v. Qualcomm, Inc., 969 F.3d 974 (9th Cir. 2020), *rev'ing* 411 F. Supp. 3d 658 (N.D. Cal. 2019).

[254] *Id.* at 986-88, 997-1003. For an antitrust analysis of *Qualcomm*, see Hovenkamp, *supra* note 252, at 103-113.

[255] 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, Fed. Trade Comm'n v. Qualcomm, Inc., 969 F.3d 974 (2019) (No. 19-16122), 2019 WL 6683006, at *5-6, 12-14.

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

The case for a breakup is strongest when noncompetitive performance or conduct seems to be inherent and thus unavoidable in the market's 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. 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 such remedies,[256] they are novel and could provoke resistance.

Because these remedies are nonstructural, they can be applied to entities other than structural monopolies, and for offenses under both §1 and §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 unlawful exclusive dealing, most-favored-nation

[256] *See* 15 U.S.C. § 25 (2018). See discussion supra, text at notes __. 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 . . . ."

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agreements,[257] or other anticompetitive contract practices should justify an injunction against continuation of the practice, but ordinarily not 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 sell-offs (divestiture) of plants, products, or subsidiaries.[258] 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 cited this concern in *Microsoft* when it refused the government's request for a breakup.[259]

In the recent past, divestiture decrees of this type have been reserved mainly for the undoing of relatively recent mergers. Even merger policy, however, shows a strong preference for avoiding breakups. For example, under the Hart-Scott-Rodino Act, most mergers today are challenged before they occur.[260] It is far less costly to both the firms and society to prevent a merger before it occurs rather than to "unscramble the eggs" later.

[257] A most-favored-nation clause (MFN) gives the dominant contracting firm better terms than those offered to any rival. *See* AREEDA & HOVENKAMP, *supra* note 7**Error! Bookmark not defined.**, ¶ 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).

[258] 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).

[259] 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 nor organized along product lines, and that the company operated out of a single integrated facility).

[260] Hart-Scott-Rodino Antitrust Improvements Act of 1976, 15 U.S.C. § 18a (2018) (setting forth merger pre-notification regime).

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a. Enabling Competitive Management

In the case of digital platforms, one alternative to divestiture is to leave the firm's physical assets intact but change the structure of ownership or management so as to make it more competitive. A platform or other organization can itself be a "market" within which competition can occur.[261] If that is so, antitrust law can be applied to its internal decision making.

Ordinarily, agreements among subsidiaries or other agents within a firm are counted as unilateral and so are attributed to the firm itself.[262] That rule is a direct consequence of the separation of ownership and control. The all-important premise, however, is that the firm's central management is the only relevant economic decision maker. When that is not the case, the antitrust analysis changes. 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.

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[261] For a different approach, see Tat-How Teh, *Platform Governance*, https://ssrn.com/abstract=3521026 [https://perma.cc/87ES-SU25] (arguing that a firm like Amazon can encourage more or less competition among its third-party sellers by altering its fee structure so as to control the prices that retailers charge rather than permitting them to set their own prices).

[262] *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) (firm could not conspire with its own employee, even if employee had an equity interest in a competing firm); Borg-Warner Protective Serv. Corp. v. Guardsmark, Inc., 946 F. Supp. 495, 499 (E.D. Ky. 1996), *aff'd*, 156 F.3d 1228 (6th Cir. 1998) (stating that, for purposes of § 1 of the Sherman Act, a firm is incapable of conspiring with its employees). The voluminous caselaw is discussed in AREEDA & HOVENKAMP, *supra* note 7, ¶¶ 1463-74.

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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 loss of economies or other synergies that generally lead to high output and lower prices. On the other hand, it will not satisfy those who believe that bigness is bad for its own sake.[263]

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.[264] 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.

The rationale seems clear: the economies of scale for growing crops were different from the economies of raising cattle. Production of stationary grains or vegetables functioned very well on small individual parcels, but cattle or fish required something much bigger. The result was that these medieval farmers grew their crops unilaterally but grazed their cattle collaboratively.

For products such as cattle or fish, the costs of shared management were lower than the cost 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

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[263] *See* discussion *supra*, text at notes __.

[264] *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).

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by comparing the costs and payoffs of alternative forms of organization.[265]

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 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.[266] The fact that this joint venture is a corporation organized under state law, as many are, does not make any difference. It is still a collaboration as far as antitrust law is concerned.

The classic antitrust example of such a collaborative structure is the 1918 *Chicago Board of Trade* case, which first articulated the modern rule of reason for antitrust cases.[267] As Justice Holmes had described the Board thirteen years previously,[268] it was an Illinois state-chartered corporation whose 1800 members were themselves

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[265] *See generally* Ronald H. Coase, *The Nature of the Firm*, 4 ECONOMIA 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 (2014)

[266] For an extensive discussion of the law governing such arrangements, see AREEDA & HOVENKAMP, *supra* note 7, ¶¶ 2220-24.

[267] Bd. of Trade of Chicago v. United States, 246 U.S. 231, 238 (1918) (stating formulation of rule of reason).

[268] Bd. of Trade of Chicago 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. Bd. of Trade of Chi. v. United States, 246 U.S. at 235.

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traders for their own individual accounts, and with individual exclusive rights to do business on the Board's trading floor.[269] 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 regarded as independent actors for the purpose of trading among themselves, and thus the call rule was challenged as price fixing among competitors.[270]

Not only is the substantive law against such collaborative activity more aggressive than for unilateral actions, 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 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. In *Chicago Board of Trade*, the Court ultimately found the 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 price. In fact, the United States' requested relief was precisely that.[271]

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 difficult to establish, particularly if there has not been an established history of dealing.[272] Further, in many circumstances the 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

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[269] Bd. of Trade of Chicago v. United States, 246 U.S. at 235, 236.

[270] *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).

[271] *Id.* at 237 (describing the suit "to enjoin the enforcement of the Call rule, alleging it to be in violation of the Anti-Trust law . . . .").

[272] *See* Verizon Commc'ns, Inc. v. Law Offices of Curtis V. Trinko, LLP, 540 U.S. 398, 409 (2004); AREEDA & HOVENKAMP, *supra* note 7, ¶ 772(d)(3).

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group of active business participants, its collective refusal to deal is governed by section 1 of the Sherman Act. The 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. This is what happened in the *Associated Press* wire service case, which involved a New York corporation whose members were 1200 newspapers[273] The Government charged the publications with "combining cooperatively" to prohibit news sales to nonmembers or making it more difficult for a newspaper to enter competition with an existing newspaper. The Court upheld the injunction against the restrictive rules under the Sherman Act.[274]

The modern business world provides many analogies to this structural situation. For example, each of the 1200 member schools of the NCAA 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.[275] 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;[276] to limit the compensation of

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[273] Associated Press v. United States, 326 U.S. 1, 3-4 (1945).

[274] *Id*. at 23. The same thing occurred under §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 15 members. Once again, the Court affirmed an injunction against a concerted refusal to deal. On the corporation's structure, *see* Brief for the FTC, Fashion Originator's Guild of Am. V. FTC, No. 537, 1941 WL 76666 (Supreme Court Feb. 1941), *4.

[275] *Membership*, NAT'L COLLEGIATE ATHLETIC ASS'N (NCAA), https://www.ncaa.org/about/who-we-are/membership [https://perma.cc/DU6H-SBAM].

[276] Nat'l Collegiate Athletic Ass'n v. Bd. of Regents of the Univ. of Okla., 468 U.S. 85, 88 (1984).

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coaches[277] or players;[278] or to limit licensing of students' names, images, and likenesses[279] 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. By contrast, if the NCAA were a single entity owning all of its various teams and IP rights, these decisions would be unilateral and largely unreachable under the antitrust laws.[280]

The same analysis drove the *American Needle* litigation, a refusal to deal case that involved the National Football League (NFL).[281] The NFL is an unincorporated association controlled by the thirty-two individual NFL 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 logoed headwear (i.e., helmets and caps) for all thirty-two teams.[282] The plaintiff, American Needle, was a competing manufacturer that the agreement excluded.[283]

The issue for the Supreme Court was whether NFLP's grant of an exclusive license should be addressed as a "unilateral" act of NFLP

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[277] Law v. Nat'l Collegiate Athletic Ass'n, 5 F. Supp. 2d 921, 933-34 (D. Kan. 1998) (condemning wage-fixing of lower-level basketball coaches).

[278] O'Bannon v. Nat'l Collegiate Athletic Ass'n, 802 F.3d 1049, 1052-53 (9th Cir. 2015) (condemning restraints on student athlete compensation); Alston v. Nat'l Collegiate Athletic Ass'n (*In re* NCAA), 958 F.3d 1239, 1243-44 (9th Cir. 2020) (condemning "rules that restrict the education-related benefits" member institutions can offer student athletes).

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

[280] Copperweld Corp. v. Indep. Tube Corp., 467 U.S. 752, 767 (1984) ("The conduct of a single firm is governed by § 2 alone and is unlawful only when it threatens actual monopolization.").

[281] Am. Needle, Inc. v. Nat'l Football League (NFL), 560 U.S. 183, 189-97 (2010).

[282] *Id*. at 187-88.

[283] *Id.* at 187.

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or as a concerted act by the thirty-two teams acting together, and the Court unanimously decided the latter. 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.[284] The Supreme Court's decision to the contrary was consistent with earlier cases *Sealy*[285] and *Topco*.[286] Both of those courts 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 they owned all of Sealy's stock.[287] In *Topco*, each of the 25 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.[288]

The jurisprudence of *Copperweld*, which precludes claims of an antitrust conspiracy between a corporation and its various subsidiaries, officers, shareholders, or employees, 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

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[284] *See* Am. Needle, Inc. v. Nat'l Football League, 538 F.3d 736, 738 (7th Cir. 2008) (citing *Chicago Professional Sports Ltd. v. National Basketball Association*, 95 F.3d 593, 597-600 (7th Cir.1996)).

[285] United States v. Sealy, Inc., 388 U.S. 350, 353-58 (1967) (finding territorial restraints and price fixing illegal in a member-owned but incorporated joint venture).

[286] United States v. Topco Assocs., Inc., 405 U.S. 596, 598, 612 (1972) (finding illegal territorial restraints in a cooperative buying association).

[287] *Sealy*, 388 U.S. at 352.

[288] *See* the district court's opinion. United States v. Topco Assocs., Inc., 319 F.Supp. 1031, 1033-1034 (N.D.Il. 1970).

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constituent parts.[289] This is how corporate law preserves the boundary between firms and markets.[290]

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 antitrust fix would be an injunction leaving each member free to make decisions about sales of its own property for itself. Such a fix need not require dissolution of the firm, and none of the decisions discussed above required that. Nor would we expect it to require ongoing regulation by the court.

Agreements among the active members or shareholders in 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 manager of its own separate business.

Without discussing the question of 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.[291] A leading subsequent decision involved Realty Multi-List, a Georgia corporation organized and owned by individual real-

[289] *See* Copperweld Corp. v. Indep. Tube Corp., 467 U.S. 752, 768-69 (1984). On the manifold contexts in which *Copperweld* issues arise, see AREEDA & HOVENKAMP, *supra* note 7, ¶¶ 1462-78.

[290] On this point, see Edward B. Rock, *Corporate Law Through an Antitrust Lens*, 92 COLUM. L. REV. 497, 505-19 (1992).

[291] United States v. Nat'l Ass'n of Real Estate Bds., 339 U.S. 485 (1950); *see id*. at 487 n.1, 494 (noting that the Washington Real Estate Board was incorporated).

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estate brokers.[292] Under the corporation's arrangement, one shareholder member could show properties listed by a different shareholder member.[293] The court concluded that both the agreements among the members fixing commission rates and the rules that excluded or disciplined brokers who deviated from these rates were unlawful under section 1 of the Sherman Act.

In the 2000s, the government and private plaintiffs sued several multiple-listing services, challenging their decisions to exclude real-estate sellers.[294] 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."[295] Several other decisions have reached similar results reaching both price fixing and concerted exclusion.[296]

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[292] United States v. Realty Multi-List, Inc., 629 F.2d 1351, 1357 (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.

[293] *Id.* at 1355-56.

[294] *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).

[295] Robertson v. Sea Pines Real Estate Cos., 679 F.3d 278, 285-86 (4th Cir. 2012).

[296] *See* Freeman v. San Diego Ass'n of Realtors, 322 F.3d 1133, 1144-47 (9th Cir. 2003) (holding that the agreement of group of real-estate 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 New York, 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

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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.[297]

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 already in the 1912 *Terminal Railroad* decision.[298] The railroad bridge across the Mississippi and adjoining terminal were very likely a natural monopoly, in this case a bottleneck through which all traffic across the river had to pass.[299] However, the facility was owned by a group of

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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).

[297] *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 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 (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 and William M. Sage, *Antitrust, health Care Quality, and the Courts*, 102 COL. L. REV. 545 (2002).

[298] United States v. Terminal R.R. Ass'n of St. Louis, 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).

[299] 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

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thirty-eight firms organized by railroad financier Jay Gould.[300] 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, the Merchants' bridge, and a "system of terminals."[301] 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.[302]

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, given that there was only one bridge.[303] 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

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> 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 Railroad, 224 U.S. at 395.

[300] *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).

[301] *Terminal Railroad*, 224 U.S. at 391-92.

[302] *Id.* at 392.

[303] *Id.* at 409-10.

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respect to expenses and charges as that occupied by the proprietary companies."[304]

These decisions, particularly the *Terminal Railroad* decree, suggest 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.[305] The problem is not that selling them on the same site is inherently anticompetitive, because it is not. Rather, the problem is 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.

But suppose a court required Amazon to turn important management decisions over to a group of actively participating stakeholders who made their own sales on the platform. 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.

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[304] *Id*. at 411. Justice Douglas' 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 273-274 and accompanying text.

[305] *See supra* note 236 and accompanying text.

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Such an approach could be particularly useful in situations involving refusals to deal. To illustrate, an important focus of the EU's Nov., 2020 Statement of Objections against Amazon is claims that Amazon "artificially favour[s] its own retail offers" in product areas where it sells both its own and third-party merchandise.[306] Under current United States antitrust law a firm acting unilaterally would not be prevented from discriminating between its own and third-party sales. Indeed, that was the very issue in *Trinko* – namely, that undisputed monopolist Verizon discriminated against third party carriers and favored its own.[307] If decision making in this area were entrusted to a consortium of active sellers, including both Amazon itself and third parties, the §1 standard would reach the conduct.

Indeed, Justice Scalia's *Trinko* opinion observed that the Supreme Court had imposed nondiscrimination obligations under similar circumstances, but only when the government was attacking concerted rather than unilateral conduct.[308] 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."[309]

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, Amazon itself, customers, and perhaps others. Production participation rule making should be public to the extent possible, and

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[306]See the press release, https://ec.europa.eu/commission/presscorner/detail/en/ip_20_2077. On the basic issue of platform separation, *see* discussion *supra*, text at notes __.

[307] Verizon Commun., Inc. v. Law Offices of Curtis V. Trinko, LLP, 540 U.S. 398, 404 (2004) (allegation that Verizon filled orders "on a discriminatory basis" as part of a scheme to discourage customers from using competing carriers).

[308]*See id*. at 410 n. 3:

> Respondent also relies upon United States v. Terminal Railroad Assn. of St. Louis, 224 U.S. 383 (1912), and Associated Press v. United States, 326 U.S. 1 (1945). These cases involved *concerted* action, which presents greater anticompetitive concerns….

[309] *Ibid*.

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provide for objective product selection criteria that did not discriminate between member and nonmember sellers.

Numerosity should not interfere with effective operation. The Chicago Board of Trade had 1800 trading members and decision makers in 1918, when organizational rules and procedures were still being managed with pencil and paper.[310] The NCAA has 1200 member schools[311] and the Associated Press had 1200 member newspapers in 1945.[312] The Terminal Railroad Association had 38 shareholder members, but the decree contemplated nondiscriminatory sharing with any non-shareholder who wished to participate.[313] One large real-estate board, the Chicago Association of Realtors, has 15,500 members.[314]

The designated decision makers could be shareholders in Amazon, Inc., but need not be. 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*,[315] *Sealy*,[316] and *Topco*[317] the relevant decision makers owned shares in the corporation. In *American Needle*, the organization in question was NFL Properties, an LLC, which does not have

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[310] *See* Bd. of Trade of Chicago v. Christie Grain & Stock Co., 198 U.S. 236, 246 (1905).

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

[312] *See Associated Press*, 326 U.S. at 3-4.

[313] *See Terminal Railroad*, 224 U.S. at 390, 411-12.

[314] *See 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].

[315] *Terminal Railroad*, 224 U.S. at 396-98.

[316] United States v. Sealy, Inc., 388 U.S. 350, 352-53 (1967).

[317] United States v. Topco Assocs., Inc., 405 U.S. 596, 598-600 (1972).

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shareholders but rather owner-members similar to a partnership.[318] Similarly, in *Associated Press*, the Court probed a cooperative association incorporated under the Membership Corporation Laws of New York.[319]

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.[320] That is not obviously 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.[321] Concerted refusals to deal can cover a range of practices from naked boycotts (per se unlawful)[322] to reasonable standard setting (rule of reason),[323] and should be addressed accordingly.

Such an approach would *not* address bigness per se. An Amazon with competitively restructured management could be just as large as it is now. Indeed, it could be even larger. Cartels function by restricting output, and facilitating internal competition should serve to increase it. Amazon would likely retain the efficiencies that flow from its size and scope. It still might be in a position to undersell smaller businesses or to exclude products that its members and rules disapprove, provided that they did not do so anticompetitively. If it did

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

[319] *Associated Press*, 326 U.S. at 3-4.

[320] Nat'l Collegiate Athletic Ass'n v. Bd. of Regents of the Univ. of Okla., 468 U.S. 85, 101 (1984) (rule of reason essential in case where "horizontal restraints on competition are essential if the product is to be available at all").

[321] *See* 12 PHILLIP E. AREEDA & HERBERT HOVENKAMP, ANTITRUST LAW ¶¶2004-2006 (4th ed. 2019).

[322] 13 Id., ¶2203.

[323] Id., ¶¶2230-2233.

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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 compatible, so that users can process instructions for all of them. "Pooling" means something similar, although with greater emphasis on the sharing of information.[324]

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, although in a more competitive environment. 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. That is, in fact, the phone system that we have, except that it involves the joint participation of dozens of companies instead of three.

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[324] 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).

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Interoperability remedies need not require any spinoffs of assets. While some sharing remedies might be complex, others need not be.[325] They may consist of little more than compelled pooling of data in a common format. 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 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 with one another 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.

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.[326] Another is JSTOR, or Journal Storage, which 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.[327] Finally, a sharing agreement that began voluntarily but was later modified by antitrust consent decrees is blanket licensing of digitized music.[328]

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[325] For a good study of the role of data interoperability in EU competition law, see Jörg Hoffmann and Begoña González Otero, Demystifying the Role of Data Interoperability in the Access and Sharing Debate (Max Planck Institute Res. Paper No. 20-16, 2020), available at https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3705217.

[326] The Supreme Court described ISO and its processes in an antitrust case, Hartford Fire Ins. Co. v. California, 509 U.S. 764, 772-73 (1993). *See also* https://www.verisk.com/insurance/brands/iso/.

[327] *See About JSTOR*, JSTOR (2020), https://about.jstor.org [https://perma.cc/VB9H-8W86].

[328] 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).

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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.[329] This system eventually led to music sharing sites such as Spotify or Apple Music, which are large blanket licensees that sublicense to users.

As these illustrations indicate, interoperability or pooling can take many forms, depending on the industry's technology and the kind of sharing that will improve the participants' performance. 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, as in most of the above examples. By contrast, dominant firms often have an incentive not to share in order to protect their position.[330] That was AT&T's position when it was the dominant carrier. Fiona Scott Morton and David Dinielli note that Facebook invited a significant amount of interoperability before it became dominant, but stopped doing so later.[331] 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 not the same thing as multi-homing. With multi-homing and low switching costs a user can switch from one firm to another easily and cheaply, such as switching among ride-hailing services or internet search engines.[332] While switching is easy, the user still accesses one service at a time. For example, without

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

[330] *See* Michael 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.").

[331] *See* Scott Morton & Dinielli, *Roadmap for an Antitrust Case Against Facebook*, *supra* note 192, at 2, 17.

[332] *See* discussion *supra* Section I.C.1.

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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.

Interoperability and pooling also differ from data portability such as 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.[333] The principal purpose of the GDPR is to protect consumer privacy, although it also is intended to make it easier to for a consumer to transfer his or her data among service platforms. By contrast, interoperability aggregates data so as to enlarge the range of positive network effects and in the process level out the competitive playing field.

Social networking sites generally have multi-homing and low switching costs, but not interoperability. A user can switch among several sites on the same device—say, from Facebook to LinkedIn to Flickr. But if the customer is searching for images on, say, Snapchat, the search will not turn up hits for Facebook, or vice-versa. By contrast, with interoperability the relevant data for all of them would be aggregated for search on one site. On ride-hailing services, an app could aggregate all drivers from Uber, Lyft, and perhaps other services. This would create a platform with a much larger group of riders and also of drivers. All participating firms would have the advantages that accrue from a larger database. They would compete on the qualities of their individual services, not on the size of the database. The one operational difference is that users would have to select a car, based on price, location, or anything else the customer wishes.

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

[333] *See* Paul de Hert, et al, *The Right to Data Portability in the GDPR: Toward User-Centric Interoperability of Digital Services*, 34 COMPUTER L. & SEC. REV. 193 (2018). On ways that the GDPR could be used by competition law authorities to implement greater interoperability, *see* Oscar Borgogna & Giuseppe Colangelo, *Data Sharing and Interoperability: Fostering Innovation and Competition Through API's*, 35 COMPUTER L. & SEC. REV. 1 (2019), available at https://www.sciencedirect.com/science/article/pii/S0267364918304503.

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search firms. That would improve search results for everyone, and thus 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, it was widely regarded as a natural monopoly, distinct from over-the-air broadcasting, which was not.[334] Indeed, the phone system was operated as a regulated monopoly for many decades before an antitrust consent order that imposed both a structural breakup and interoperability requirements.[335] 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.[336]

Even though 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. You can own a Samsung phone on Verizon Wireless in

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[334] *See, e.g.*, GTE Serv. Corp. v. Fed. Comm'cns Comm'n, 474 F.2d 724, 735 (2d Cir. 1973) (noting that the FCC concluded the telephone system is a natural monopoly); Gen. Tel. Co. v. United States, 449 F.2d 846, 856, 859 (5th Cir. 1971) (noting telephone companies' argument that it was a natural monopoly, and also the government position that over-the-air broadcasting was not a natural monopoly); Nat'l Assn. of Theatre Owners v. Fed. Commc'ns Comm'n, 420 F.2d 194, 203 (D.C. Cir. 1969) (noting that telephone systems are a natural monopoly but not commercial broadcasting); *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).

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

[336] *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 incumbent carriers' obligations under the Telecommunications Act of 1996 to share telephone networks with competitors).

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Oregon and call someone who owns a Vtech phone on a Frontier landline system in North Carolina.[337]

The Stigler Center's 2019 *Final Report* on Digital Platforms briefly discusses forced interoperability as a solution to firm dominance problems in networked markets.[338] The *Report* cites social-networking platforms and particularly Facebook as candidates for interoperability. It notes that Facebook has litigated against at least one firm that was trying to create de facto interoperability by putting links and messages for its own site into Facebook pages.[339] If firms such as Facebook or Google, which depended 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. For example, users who opted out of data sharing would effectively opt out across all services that accessed their data. Individual firms could still compete along many other avenues, but not on the size of their consumer information base.

The Stigler Center *Final Report* also mentions messaging as a market where compelled interoperability could increase social value by increasing the range of people who could communicate. Today the system for voice calls permits virtually any device to contact any other

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[337] This regulatory regime is described in *Verizon Communications Inc. v. Law Offices of Curtis Trinko*, *LLP*, 540 U.S. 398, 405-406 (2004).

[338] *See* STIGLER COMM. ON DIGITAL PLATFORMS, FINAL REPORT 16 (2019), https://research.chicagobooth.edu/-/media/research/stigler/pdfs/digital-platforms---committee-report---stigler-center.pdf [https://perma.cc/C96V-75KF].

[339] *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 motion to dismiss Facebook's claim against Power Ventures, Inc. for collecting user information from Facebook's website in violation of federal law). The Ninth Circuit eventually found that Power Ventures, Inc. had trespassed on Facebook computers violation of Computer Fraud and Abuse Act. Facebook, Inc. v. Power Ventures, Inc., 844 F.3d 1058, 1065-66 (9th Cir. 2016).

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device. By contrast, even though the technology is available, text messaging is still tied to multiple incompatible formats.[340]

One possibility that must be accounted for is increased opportunities for 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.[341]

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[340] *See* Tejas N. Narechania, *The Secret Life of a Text Message*, COL. L. REV. FORUM (forthcoming 2020), https://ssrn.com/abstract=3526997 [https://perma.cc/HAK7-5PMX]; *see also* JACQUES CRÉMER, YVES-ALEXANDRE DE MONTJOYE & HEIKE SCHWEITZER, EUROPENA COMMISSION: COMPETITION POLICY FOR THE DIGITAL ERA 58-60, 83-85 (2019), https://ec.europa.eu/competition/publications/reports/kd0419345enn.pdf [https://perma.cc/S3K5-QSG9] (discussing interoperability's role in fostering multi-homing and competition); JASON FURMAN, DIANE COYLE, AMELIA FLETCHER, DEREK MCAULEY & PHILIP MARSDEN, UNLOCKING DIGITAL COMPETITION: REPORT OF THE DIGITAL COMPETITION EXPERT PANEL 5, 71-73 (2019), https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/785547/unlocking_digital_competition_furman_review_web.pdf [https://perma.cc/BB5Y-NNV5] (recommending a new UK digital markets unit, which would be charged with enabling "'systems with open standards"); Joseph Gratz & Mark A. Lemley, *Platforms and Interoperability in Oracle v. Google*, 31 HARV. J.L. & TECH. 603, 612-13 (2018) (explaining the importance of interoperability for connecting a "wide array of devices"); Wolfgang Kerber & Heike Schweitzer, *Interoperability in the Digital Economy*, 8 J. INTELL. PROP. INFO. TECH. & ELEC. COM. L. 39, 44, 54 (2017) (describing the use of a single standard that facilities products being used on different platforms); Chris Riley, *Unpacking Interoperability in Competition*, 5 J. CYBER POL'Y 94 (2020) (examining "how interoperability fits within the existing landscape for competition law," and how it may apply to internet data exchanges); Michael Kades, *A Consistent if Not Unified Vision: A Summary of the Stigler, UK Competition and EC Competition Reports*, WASH. CTR. FOR EQUITABLE GROWTH (Nov. 19, 2019), https://equitablegrowth.org/wp-content/uploads/2019/11/Michael-Kades-A-Consistent-if-not-Unified-Vision.pdf [https://perma.cc/R77S-HQT6] (summarizing and largely agreeing with these views).

[341] *See* OSTROM, *supra* note 264, at 58-61. For one version of these proposed rules, see Michael Kades & Fiona Scott Morton, *Interoperability*

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Free riding is less likely 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, and the pool of potential riders on the other side. Under interoperability the user would have to 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 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.[342]

Because network effects can be a formidable barriers to entry, 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 the extent it is shared among all participating insurers.[343] Individual self-recording artists can license their

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as a Competition Remedy for Digital Networks (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].

[342] *See also* Filip Caron, *The Evolving Payments Landscape: Technological Innovation in Payment Systems*, 20 IT PROF'L 53 (Mar.-Apr. 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).

[343] *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*

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performances to ASCAP.[344] In sum, effective interoperability operates as a substitute for 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 IP 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 which cable company or satellite service you subscribe to.

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. It 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.[345] Here, the

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Public Utility Style Rate Regulation in Insurance, 35 YALE J. REG. 941, 968-72 (2018).

[344] *See* https://www.ascap.com/help/royalties-and-payment/payment/registering.

[345] 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. DEP'T OF JUST. & FED. TRADE COMM'N, 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*

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best solution is an injunction against the anticompetitive exclusive deal or merger.

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 can be harmful but are often difficult to foresee. We should be paying more attention to remedies that permit firms to perform better rather than worse. 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 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 place a premium on large databases of digitized information.

Finally, 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 can be as wide as legislative jurisdiction permits. This difference need not be important, however, when sharing is to everyone's advantage. For example, if Google should be ordered to share its customer information, that obligation should run

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note 7**Error! Bookmark not defined.**, at ¶ 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-TTTA] (examining the Vertical Merger Guidelines against section 7 of the Clayton Act's requirements).

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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. Indeed, increased internal competition would yield higher output and lower prices.

III. PLATFORM ACQUISITIONS

A. Acquisitions of Nascent Firms Generally

Given that most digital platforms are not natural monopolies, they must engage in strategic exclusionary behavior in order to maintain dominant positions. 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 and significant but undeveloped growth potential. 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 [346] 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

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[346] *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.").

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price, even if their business will be shut down as a result.[347] Capital markets reflect this phenomenon. It is easier to get capital for a new firm that is highly likely to be acquired rather than a firm with a technology that is promising on its own terms.[348]

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 firms rather than disappear into one of the large digital platforms. One possibility is the antitrust merger laws. However, this may require new legislation governing platform acquisitions, given that the acquired firms are often very small and do not sell competing products.

I say that the area "may" require new legislation because the need is not clear from the statutory language. Section 7 of the Clayton Act is very broad, reaching all acquisitions whose effect may be substantially to lessen competition.[349] Its coverage is not limited to firms of any particular size, market share, or with any particular 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, which is to police acquisitions when their competitive threats are still in their "incipiency."[350] However, years of restrictive

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[347] *See* Mark A. Lemley & Andrew McCreary, *Exit Strategy* 7-8, 54-56 (Stanford Law and Economics Olin Working Paper, No. 542, 2020), https://ssrn.com/abstract=3506919 [https://perma.cc/5ZC8-HKTB].

[348] *E.g.*, *id*. at 24-41 (documenting venture capital markets' heavy orientation toward new entrants' selloff possibilities); Armin Schwienbacher, *Innovation and Venture Capital Exits*, 118 ECON. J. 1888, 1890 (2008).

[349] 15 U.S.C. § 18 (2018).

[350] *See* Brunswick Crop. 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, 597 (1957); *see also* Herbert Hovenkamp, *Prophylactic Merger Policy*, 70 HASTINGS L.J. 45, 51-55 (2018) (discussing applications of the incipiency test).

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interpretation have added a judicial gloss that reads the statute much more narrowly.[351]

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. 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. If that acquisition had been challenged, it would very likely have been on conventional, price-increasing theories of merger harm. That is, 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. Another is Google's 2011 acquisition of ITA software, a firm that facilitated flight search through back-end services. The acquisition made it more difficult for competing flight search firms to achieve scale economies.[352]

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, but rather to prevent the emergence of substantial rivals. There is legal authority for treating

[351] E.g., United States v. Baker Hughes, Inc., 908 F.2d 981 (D.C.Cir. 1990) (refusing to condemn merger in concentrated market); New York v. Deutsche Telekom AG, 439 F.Supp.3d 179 (S.D.N.Y. 2020) (similar).

[352] *See* Complaint at 4-5, United States v. Google Inc., No. 1:11-cv-00688 (D.D.C. Apr. 8, 2011), https://www.justice.gov/atr/case-document/file/497686/download [https://perma.cc/CJ9G-Y6Z7]. The merger was eventually approved with conditions. *See* Press Release, U.S. Dep't of Just., Justice Department Requires Google Inc. to Develop and License Travel Software in Order to Proceed with Its Acquisition of ITA Software Inc. (Apr. 8, 2011), https://www.justice.gov/opa/pr/justice-department-requires-google-inc-develop-and-license-travel-software-order-proceed-its [https://perma.cc/A89C-UPDW]. For further discussion, see Scott Morton & Dinielli, *Roadmap for a Digital Advertising Monopolization Case Against Google*, *supra* note 178, at 31.

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mergers as exclusionary practices, but very little recent enforcement history.[353]

Most of the threat from nascent firms is not from head-to-head competitors. Given the significant scale and network economies that the large platforms enjoy, a startup who simply offers an identical product is unlikely to be a significant threat. The more likely 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. 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.[354] So-called "conglomerate" mergers, between firms whose relationship is neither horizontal nor vertical, are rarely challenged. Unfortunately, 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, causation as to any particular acquisition is 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 market shares of zero or at least very small. Predicting at the time of a contemplated transaction which ones will yield such a threat could be impossible. As a result, a more categorical approach is required.

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[353] *See* AREEDA & HOVENKAMP, *supra* note 7, ¶¶ 701-702.

[354] The government's challenge of the AT&T/Time Warner merger is a recent exception and generated great attention for challenging a vertical merger. *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.").

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In general, monopolization actions fall under section 2 of the Sherman Act, which requires proof of dominance. Under current doctrine this typically requires a large market share of a properly defined relevant market.[355] For large internet platforms, market definition is often untrustworthy. For example, it requires the answer to questions such as whether online product sales and advertising compete with more traditional alternatives, or whether customer ability to switch undermines any inference of market power drawn from market share. In a few markets, such as search, the answer seems clear. For example, Google Search has had a relatively stable market share that has exceeded 85% for at least ten years. Under the conventional theory, that would certainly be sufficient to condemn a horizontal Alphabet acquisition in the search market, but perhaps not in many of the other markets where it has made acquisitions. By contrast, if "digital advertising" is a relevant market, Alphabet (around 36-38%) and Facebook (around 19%) have significant but not monopolistic market shares. Further, digital advertising accounts for only about half of all advertising, although its share is growing. While Amazon is very large, in most product markets other than eBooks, it lacks a dominant market share. It does control roughly 67% of the eBook market, but eBooks themselves account for a declining or at best level market share of about 20% of the overall book market. In sum, few of the large platform acquisitions of nascent firms would constitute a section 2 violation.

New entry ordinarily undermines monopoly. Consumers benefit because the combined output of the dominant firm plus the new entrant will be larger that 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 and prices down toward the competitive level. In the case of systematic platform acquisitions,

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[355] *See supra* Section I.A. Thanks to substantial progress in economic measurement tools, market power is often best measured directly for mergers, *see* AREEDA & HOVENKAMP, *supra* note 7, ¶¶ 913-914. By contrast, section 2 cases continue to require a market definition. *See* Spectrum Sports, Inc. v. McQuillan, 506 U.S. 447, 455-56 (1993).

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however, the opposite can be true. New firms form and are soon acquired, in the process entrenching the dominant firms who buy them out. Systematic acquisitions of nascent firms thus serve to undermine the traditional argument that new entry breaks down monopoly and promotes competition.[356]

Two firms in a bargaining relationship will move toward their joint maximizing position.[357] 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.[358]

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 most important acquired assets in most platform merger cases involving nascent digital firms are intellectual property rights. The more 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.

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

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

[358] See discussion *infra* Section III.B on killer acquisitions.

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One promising remedy is to limit any acquisition to a nonexclusive license. An alternative is to permit the acquisition only on the condition that the acquiring firm license the acquired technology to others on fair and reasonable terms.[359] 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 IP assets to the public, but extinguishes the acquired firm.[360] 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.[361]

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, defined by size rather than market share, should simply be forbidden from making any acquisition of another firm other than one of unconditioned nonexclusive rights to intellectual property.

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[359] *See* Kevin A. Bryan & Erik Hovenkamp, *Antitrust Limits on Startup Acquisitions*, 56 REV. INDUS. ORG. 615, 623-29 (2020); Bryan & Hovenkamp, *supra* note 356, at 339-42.

[360] Bryan and Hovenkamp, *supra* note 356, at 353-355. They argue for the compulsory-licensing alternative.

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

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Such a limitation would reduce the value of the acquired firm, perhaps considerably. The 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,[362] and the Federal Circuit's more recent *Trebro* decision.[363] 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.

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. For example, if

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[362] 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.")

[363] 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).

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Facebook wishes to acquire WhatsApp, as it actually did in 2014,[364] it would be permitted to acquire a nonexclusive license in WhatsApp's technology. This would give Facebook all it needs to make the contemplated improvements in its own messaging technology. WhatsApp would then be free to continue to use its technology or to grant nonexclusive rights to others. Alternatively, if Facebook were permitted to acquire WhatsApp but compelled to license out any acquired technology, it would also be able to capture the full value of any integration that the acquisition facilitated, but not the right to exclude others from the technology.[365]

B. Killer Acquisitions

A killer acquisition occurs when a firm buys another firm in order to remove its productive assets from the market.[366] The problem

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[364] Chelsey Dulaney, *Facebook Completes Acquisition of WhatsApp*, WALL ST. J. (Oct. 6, 2014, 9:58 AM ET), https://www.wsj.com/articles/facebook-completes-acquisition-of-whatsapp-1412603898 [https://perma.cc/S62Y-SU4M].

[365] The consent decree permitting the previously discussed Google-ITA software merger in flight search required Google to license the relevant information to rivals. *See* Press Release, *supra* note 352 (noting that Google would be required to license the acquired firm's "software to airfare websites on commercially reasonable terms").

[366] *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/5GAS-2QSP]; *see, e.g.*, Complaint for Injunctive and Other Equitable Relief at 2, Fed. Trade Comm'n v. Mallinckrodt Ard Inc., No. 1:17-cv-00120 (D.D.C. filed Jan. 25, 2017), https://www.ftc.gov/system/files/documents/cases/170118mallinckrodt_complaint_public.pdf [https://perma.cc/F43Y-BUDX]; *see also* Colleen Cunningham, Florian Ederer & Song Ma, *Killer Acquisitions*, J. POL. ECON. (forthcoming 2020) (manuscript at 1 & n.2) (giving several examples of killer acquisitions, mostly from the pharmaceutical industry); Amy C. Madl,

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is not new. Already in 1916 American Can was condemned of monopolization for buying up rival can-making firms and promptly dismantling their assets in order to keep them off the market.[367] 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 technology and shut it down, simply to protect its own turf.[368] 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.[369] 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.[370] For example, the assets of an acquired pharmaceutical-research firm may include drugs that are in development but not yet tested or brought to market.[371]

In its simple form the problem of killer acquisitions should be easy. Any failure of the legal system to take a more aggressive position

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Killing Innovation?: Antitrust Implications of Killer Acquisitions, 38 YALE J. ON REG. BULL. 28, 34-35 (2020) (defending some killer acquisitions in the pharamaceuticals industry).

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

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

[369] *See supra* notes 362-365 and accompanying text.

[370] Cunningham et al., *supra* note 366, at 2 (modeling acquisitions when the target firm's assets are still under development and project success is uncertain).

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

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is largely a result of classification myopia. Rather than treating them like mergers, we should treat them more like cartels. In that case we need not be deterred by lack of evidence that they lead to higher prices in the short run, because that rarely occurs.

The reason we permit most mergers rather than making them unlawful per se is because of their potential to generate efficiencies.[372] 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.[373] 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.[374] If a firm purchases a rival for $1 million and then shuts it down, the transaction

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[372] *See* AREEDA & HOVENKAMP, *supra* note 7, ¶¶ 970-76; Herbert Hovenkamp, *Appraising Merger Efficiencies*, 24 GEO. MASON L. REV. 703, 704 (2017).

[373] *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).

[374] *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 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 Association 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 (1906) (holding that an agreement between two hoteliers where one would shut down for a period of three years contravened public policy).

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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. The easy case is the 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.[375] But other cases are harder to classify. Not all mergers work out.[376] 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 such shutdowns. [377]

Another qualifier is the possibility of partial shut downs. 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.[378] 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

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[375] United States v. Am. Can Co., 230 F. 859, 875 (D. Md. 1916); *see supra* notes 367-368 and accompanying text.

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

[377] *See, e.g.*, Madl, *supra* note 366, 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.

[378] 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].

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offset by benefits in a different market[379]—and certainly not in cases where the threat is substantial 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.[380] As a result, a viable transfer may be difficult.

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.[381] The dominant firm purchased a patent on technology that was different from its own, and then shelved the technology rather than practicing it.[382] Subsequently, the firm brought a successful infringement suit against a rival who entered the market with technology that infringed the unused patent.[383] The resolution in that decision effectively used the patent system to harm competition in both the short and the long run.[384] First, it

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[379] *See* AREEDA & HOVENKAMP, *supra* note 7, ¶ 972.

[380] 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).

[381] 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).

[382] *Paper Bag*, 210 U.S. at 406.

[383] 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. *Paper Bag*, 210 U.S. 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).

[384] This was also the case in Trebro Manufactuing., 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

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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. Of course, the acquisition of a non-exclusive right might be part of a firm's longer-run plan for technology that it hopes to use, and antitrust policy should not stand in the way.

CONCLUSION

A common complaint about antitrust is that it is costly and slow. While both claims are valid, the social cost of fact intensive decision making is likely much less than the social cost of making incorrect decisions that can affect millions. Antitrust is a litigation-driven enterprise that requires decision makers to focus on the specific assets and practices before them. Unlike legislative regulation, antitrust does not group classes of industries together for common treatment, but it is also not as susceptible to short-run interest group pressures.

Nevertheless, antitrust can be subject to strong decision biases. Consumer welfare is a public good. Consumers are numerous, heterogenous, 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

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small market that may not have a broad-reaching effect."); *see* Hovenkamp & Cotter, *supra* note 363, at 889-93.

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accrue from competition, even though consumers' aggregate gains are much larger.[385]

As a result, antitrust litigation produces too many false negatives. Antitrust today suffers from an anti-enforcement bias that is scientifically obsolete. 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.

Antitrust's fact-specific, individual approach to intervention is superior to regulation when failures of competition are specific to the firm rather than inherent in the market. As a result, calls for categorical treatment often amount to regulation by another name. An example is categorical statements of the nature that the big digital platforms must be broken up. 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. These overly generalized conclusions frustrate rather than further reasonable competitive analysis of digital platforms. Platforms differ by almost as wide a range as firms generally differ.

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. The optimal remedy will vary with the nature and technology of the market as well as the individual firm and its conduct. Simple injunctions should always be considered. Often they can remedy discrete problems while doing little to no damage to the efficiency and integrity of the firm or the market in which it operates. As the long history of antitrust shows, breaking apart assets is 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

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[385] *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].

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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. Where it works, 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 existing antitrust law's capacity to handle them. The courts and other antitrust policy makers should treat digital platforms for what they are, which is business firms that have unique features but not very much that requires us to abandon what we know about competition in high-technology, product-differentiated markets.

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